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Year after year, ever since 1908, the Australian Year Book has been published annually without fuss or fanfare, providing each year a new source of information about, and for, Australia and Australians. It is hard to think of any single national development of note over the past eighty years on which the Year Books do not throw light. Here, in one publication, is a continuous record of government policies, international relationships and a concise statistical summary of every facet of Australia's economy and society. Through the Year Books, one can scan eighty years of life on this continent, tracing the changes and noting the trends. The Year Books have included, too, from time to time, special articles of topical interest, thus adding unexpected treasure troves of detail to the broad brush-strokes of history.

As we enter this, our Bicentennial Year, it is appropriate that that faithful mirror of Australia past and present, the Australian Year Book, should accompany us, reflecting in its candid glass the nation in all its states and conditions. The strength of nations, as of individuals, lies in self-knowledge and there can be few better introductions to a knowledge of this nation than through its Year Books.

Ninian Stephen

His Excellency the Right Honourable
Sir Ninian Stephen,
A.K., G.C.M.G., G.C.V.O., K.B.E.
Governor-General of the Commonwealth
of Australia

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PREFACE

Year Book Australia is the principal reference work produced by the Central Office of the Australian Bureau of Statistics (ABS). It provides a comprehensive and detailed statistical review of various aspects of the economy and social conditions in Australia. In addition, it contains descriptive matter dealing with Australia's history, government, international relations, defence, climate, physiography, culture and environment.

The first Official Year Book of the Commonwealth was published early in 1908, though individual Australian States and colonies had been producing year books for several decades before that. *Year Book Australia 1988* is a commemorative edition, marking the bicentenary of permanent European settlement in Australia. As with its predecessors, the *Year Book* is issued under the authority of the Commonwealth Government. It follows a similar pattern to past issues but, in recognition of the bicentenary, an historical perspective has been included in many chapters.

A special feature is an historical study by Professor Colin Forster and Dr Cameron Hazlehurst entitled 'Australian Statisticians and the Development of Official Statistics'. The study tells of many Australian official statisticians who were among the world leaders in their profession — Archer, Hayter and Coghlan in the second half of the nineteenth century, and Knibbs, Wickens and Wilson in the first half of the twentieth. It also reveals that the first 'year book' produced in an Australian colony — the *Victorian Year Book* for 1873 — 'was a venture which probably had not been attempted elsewhere on an official basis'.

In addition to the special historical study, this *Year Book* contains nineteen briefer special articles prepared by contributors from various organisations, and many of the chapters have been revised and new material added.

More detailed, and in most cases more recent, statistics are available through other ABS dissemination media — printed publications, microfiche, magnetic tapes, floppy diskettes, Viatel, CD-ROM, etc. The ABS *Catalogue of Publications* (1101.0) lists all recent and current ABS publications.

I extend my thanks to the many persons from various organisations who have been involved in the preparation of this bicentennial issue of *Year Book Australia*. They have sought to maintain a valuable tradition which has been established in Australia for more than a century, and which was expressed by the Victorian Government Statist, in his Preface to the 1873 *Year Book*, in the following terms:

> It will be my endeavor in this succession of volumes to record facts with correctness and impartiality; to comment upon them only so far as may be necessary to elucidate them properly; to set up no theories except such as may be fairly deducible from the materials before me; and, in drawing inferences, to exercise perfect fairness to all sections of the community.

Ian Castles

IAN CASTLES
Australian Statistician

Australian Bureau of Statistics
Canberra
June 1988

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A number of government departments as well as private organisations and bodies have provided information in conjunction with the Australian Bureau of Statistics for inclusion in the *Year Book*.

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- A.C.T. Electricity Authority
- A.C.T. Health Authority
- AGL Canberra Limited
- AMDEL Limited
- Attorney-General's Department
- AUSSAT Pty Ltd
- Australia Council
- Australia Post
- Australian Archives
- Australian Broadcasting Corporation
- Australian Broadcasting Tribunal
- Australian Bureau of Agricultural and Resource Economics
- Australian Customs Service
- Australian Dairy Corporation
- Australian Egg Marketing Council
- Australian Electoral Commission
- Australian Federal Police
- Australian Institute of Criminology
- Australian Institute of Marine Science
- Australian International Development Assistance Bureau
- Australian Meat and Livestock Corporation
- Australian Mineral Industries Research Association Limited
- Australian National Railways Commission
- Australian Nuclear Science and Technology Organisation
- Australian Road Research Board
- Australian Sports Commission
- Australian Taxation Office
- Australian Wheat Board
- Australian Wool Corporation
- Bureau of Meteorology
- Bureau of Mineral Resources, Geology and Geophysics
- Commonwealth Grants Commission (Professor R. Mathews)
- Commonwealth Scientific and Industrial Research Organisation
    - Division of Building Research
    - Water Resources Committee
- Commonwealth Tertiary Education Commission
- Defence Service Homes Corporation
- Department of Aboriginal Affairs
- Department of Administrative Services
    - Surveying and Land Information Group
- Department of the Arts, Sport, the Environment, Tourism and Territories
    - A.C.T. Administration
    - A.C.T. Housing Trust
    - Arts Branch
    - Environment Branch
    - Film Branch
    - Sport and Recreation Division
- Department of Community Services and Health
    - Public Housing Branch
- Department of Defence
- Department of Employment, Education and Training
- Department of Foreign Affairs and Trade
- Department of Housing (New South Wales)
- Department of Immigration, Local Government and Ethnic Affairs
- Department of Industrial Relations
- Department of Industry, Technology and Commerce
- Department of Industry, Technology and Resources (Victoria)
- Department of Lands and Housing (Northern Territory)
- Department of Mineral Resources (New South Wales)
- Department of Mines (Queensland)
- Department of Mines (Western Australia)
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- Department of Prime Minister and Cabinet
    - Australian Bicentennial Authority
- Department of Social Security
- Department of Transport and Communications
- Department of Water Resources (New South Wales)
- Dumaresq–Barwon Border Rivers Commission, Brisbane
- Engineering and Water Supply Department, Adelaide
- Film Censorship Board
- Industrial Design Council of Australia

Industries Assistance Commission
Insurance and Superannuation Commissioner
Life Insurance Commissioner
Management and Investment Companies Licensing Board
Metropolitan Transit Authority of Victoria
National Arts Industry Training Committee
National Association of Australian State Road Authorities
National Association of Testing Authorities, Australia
National Heart Foundation of Australia
National Industry Extension Service
National Library of Australia
National Occupational Health and Safety Commission
National Standards Commission
Northern Territory Water Authority
Overseas Telecommunications Commission, Australia
Queensland Housing Commission
Queensland Railways
Queensland Water Resources Commission
Rail Industry Council
Reserve Bank of Australia
River Murray Commission
Rivers and Water Supply Commission, Hobart
Rural Water Commission of Victoria
Services and Investment Limited
South Australian Housing Trust
Special Broadcasting Service
Standards Association of Australia
State Housing Commission of Western Australia
State Rail Authority of New South Wales
State Transport Authority, South Australia
State Transport Authority of Victoria
Tasmanian Housing Department
Telecom Australia
Victorian Ministry of Housing
Water Authority of Western Australia
Westrail

GENERAL INFORMATION

Symbols

The following *symbols*, where shown in columns of figures or elsewhere in tables, mean:

n.a.	not available
n.y.a.	not yet available
—	nil or rounded to zero
..	not applicable
n.p.	not available for separate publication (but included in totals where applicable)
p	preliminary—figure or series subject to revision
r	figures or series revised since previous issue
n.e.i.	not elsewhere included
n.e.c.	not elsewhere classified
n.e.s.	not elsewhere specified
———	break in continuity of series (where drawn across a column between two consecutive figures)
*	subject to sampling variability too high for most practical purposes.
	m.—males; f.—females; p.—persons.

Other forms of usage

The following *abbreviations* are used for the titles of the Australian States and Territories and Australia: N.S.W. (New South Wales), Vic. (Victoria), Qld (Queensland), W.A. (Western Australia), S.A. (South Australia), Tas. (Tasmania), N.T. (Northern Territory), A.C.T. (Australian Capital Territory), Aust. (Australia).

In general, the *statistics in this volume relate to the States and Territories of Australia*, i.e. they exclude particulars of the External Territories of Australia, which, however, are specifically dealt with in Chapter 27, The Territories of Australia.

Yearly periods shown as e.g. 1986 refer to the year ended 31 December 1986; those shown as e.g. 1985–86 refer to the year ended 30 June 1986. Other yearly periods are specifically indicated. The range of years shown in table headings, e.g. 1901 to 1985–86 indicates the period covered, but does not necessarily imply that each intervening year is included.

Values are shown in Australian dollars ($ or $A) or cents (c) unless another currency is specified.

Catalogue numbers. Throughout this book references are made to ABS publications. In each case the catalogue number is shown in brackets; this should be quoted when ordering these publications (*see* below).

Where figures have been rounded, *discrepancies may occur between sums of the component items and totals.*

Availability of ABS publications

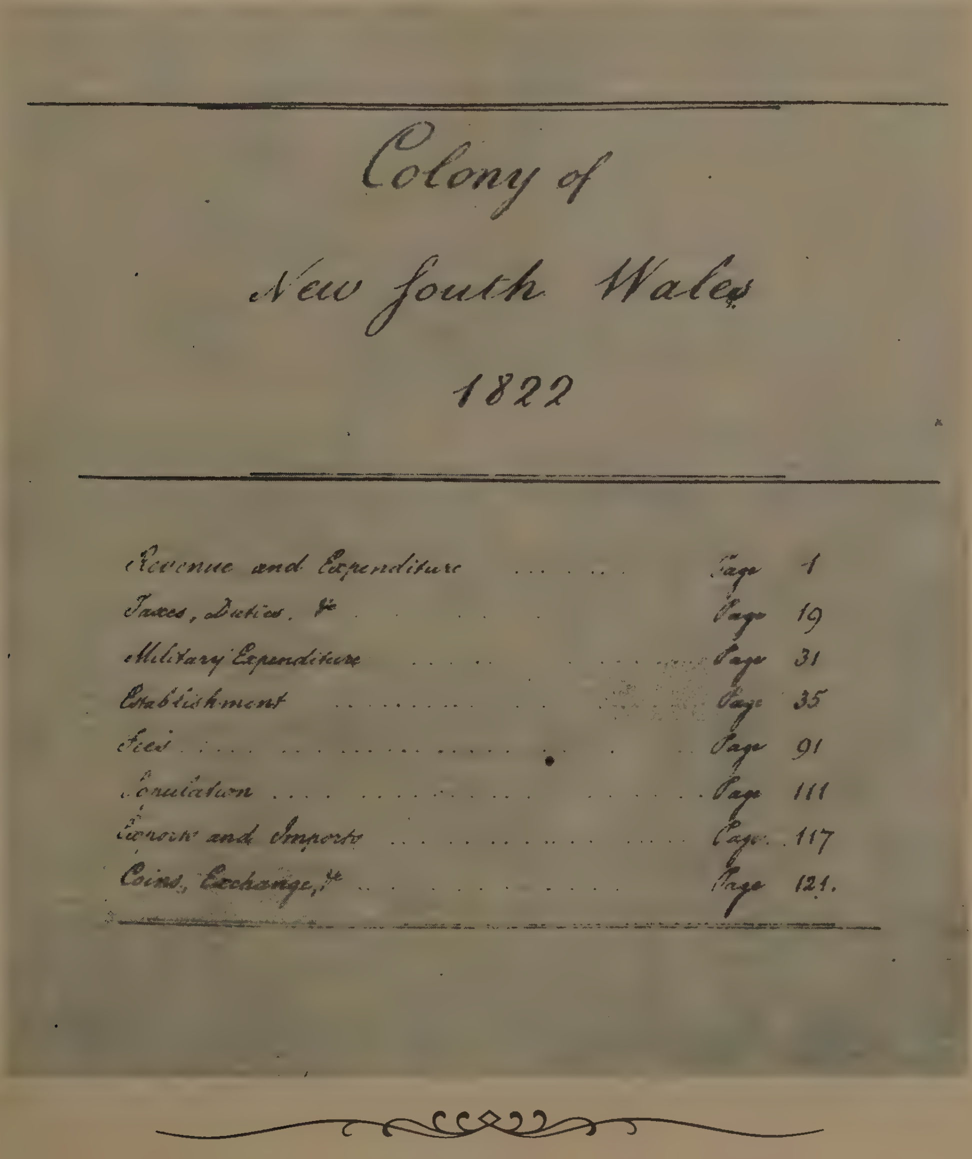
Information regarding the availability of ABS publications and other products can be obtained from the Information Services Section, Australian Bureau of Statistics, P.O. Box 10, Belconnen, A.C.T. 2616, Australia, phone (062) 52 6627, or from ABS offices in any capital city in Australia.

A complete list of ABS publications produced in Canberra and in each of the State Offices is contained in the ABS *Catalogue of Publications, Australia* (1101.0) which is available from any ABS office.

In some cases, the ABS can also make available information which is not published. This information may be made available in one or more of the following forms: microfiche, photocopy, data tape, computer printout or clerically extracted tabulation. Generally, a charge is made for providing unpublished information. Inquiries may be made by contacting Information Services in the nearest ABS office.

AUSTRALIAN STATISTICIANS AND THE DEVELOPMENT OF OFFICIAL STATISTICS

Colin Forster and Cameron Hazlehurst



Colony of

New South Wales

1822

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Taxes, Duties, &c	Page 19
Military Expenditure	Page 31
Establishment	Page 35
Fees	Page 91
Population	Page 111
Exports and Imports	Page 117
Coins, Exchange, &c	Page 121.

Returns of the Colony ("Blue Books"), 1822, (A.O. N.S.W. ref.: 4/251) held by the Archives Office of N.S.W.

In the preparation of this essay, Professor Colin Forster took particular responsibility for the colonial period and Dr Cameron Hazlehurst for the twentieth century. The authors are grateful for the assistance of Ann Mihulka, Rosemary Brissenden, Margot Kerley, Helen Bridge and Carol Flanagan.

PART I

IMPERIAL STATISTICS 1788–1855

THE EARLY YEARS 1788–1822

ARTHUR PHILLIP was the first Australian statistician. In 1787 he was appointed Captain-General and Governor-in-Chief of New South Wales and its dependencies with the widest powers: powers necessary to transport a fleet of convicts and to establish and maintain a settlement far beyond immediate supervision from London. With this freedom of action however went accountability. The settlement was seen as an economic means of disposing of felons, but only time and comprehensive accounting records would show whether the experiment was a success. More than economics was involved, with the British authorities requiring reports on social and legal matters. Accountability is implicit throughout the *Instructions* given to Phillip in April 1787, and this involved the collecting and collating of information in numerical form. Some tasks were specified. He was required to issue tools and utensils and

> use every proper degree of economy, and be careful that the Commissary so transmit an account of the issues from time to time to the Commissioners of our Treasury, to enable them to judge of the propriety or expediency of granting further supplies. The clothing of the convicts and the provisions issued to them, and the civil and military establishments, must be accounted for in the same manner.[1]

To the appropriate Secretary of State had to go 'an account of the numbers inhabiting the neighbourhood of the intended settlement'.[2] Land grants could be made to emancipated convicts, in which case 'you will cause copies of such grants as may be passed to be preserved, and make a regular return of the said grants'[3], not only to Treasury but also to the Committee for Trade and Plantations.

The type of statistical material produced by Phillip can be seen in his early reports. On 9 July 1788 in his fourth dispatch to Lord Sydney at the Home Office, Phillip included, along with an account of population numbers, tables relating to livestock in the settlement, to a general return on the four companies of marines and to a return on the sick and the dead since the landing.[4] The following day, reporting to the Admiralty, he referred to the inclusion with his dispatch of 'the weekly accounts'.[5] On 28 September a Commissariat return was sent to the Home Office on the state of stores and the number of persons being victualled at Sydney and Norfolk Island.[6] A detailed return of the whole population was included in Phillip's dispatch dated 25 July 1790; it was signed by the Commissary and numbered the population in categories of men, women and children classified as military, civil or convict.[7] Phillip's first return with details of land grants was dated 5 November 1791; it listed the names of 87 settlers who had been granted land in New South Wales and Norfolk Island with details of their status, marital situation, date of settling, size and location of grant and area in actual cultivation.[8] The following year on 16 October the return was able to indicate what crops were being grown on the cleared ground.[9]

On Phillip's departure in December 1792, Lieutenant-Governor Grose administered the settlement, and he was informed on 15 November 1793 that his duties

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For notes pertaining to Parts I and II *see* pp. 35ff.

included 'a yearly return . . . signed by the Governor of the settlement . . . of all births and deaths within the settlement'.[10] Grose was also reminded of the detail required in the Commissariat returns:

> A like return should be transmitted of all provisions, clothing, and stores, annually received for the use of the settlement . . . [and] returns of their distribution, under separate heads, of clothing, stores, and provisions. The distribution of the provisions should appear in a victualling-book, which should be kept by the Commissary, in like manner as is usual with pursers in the Navy, bearing the persons on separate lists, where their rations differ, the title of each list expressing the ration; and the ready-made clothing should be distributed in the manner above mentioned; and a regular account, both as to the time and the numbers, mentioning their names to whom it is distributed, should appear in a yearly return of clothing.[11]

In the years that followed, a flow of statistics was sent from New South Wales to Britain, while for their part the British colonial authorities, with varying success, ordered more types of information, more accurate information and more regular information. The Governors not only had the duty of reporting on the state of the colony, they had actually to administer the colony: a colony established as a large gaol in a wilderness, which grew rapidly and in which free settlement soon became important. For their own use the Governors required detailed information, and the very nature of the colony, the fact that it was under firm government control, meant that from its beginning the statistics created were basically official statistics. Four areas of statistics are now considered.

Population

A gaol requires the careful counting and identification of prisoners. This requirement was reinforced in New South Wales because prisoners were not only the workforce of the settlement but had to be supplied from the public stores, which themselves were wholly imported and were at critically low levels in the first years of settlement. Phillip's first report on population was in his dispatch of 9 July 1788:

> Of the convicts, 36 men and 4 women died on the passage, 20 men and 8 women since landing—eleven men and one woman absconded; four have been executed, and three killed by the natives. The number of convicts now employed in erecting the necessary buildings and cultivating the lands only amounts to 320—and the whole number of people victualled amounts to 966—consequently we have only the labour of a part to provide for the whole.[12]

Convicts then were constantly being counted and often as part of the total population. These counts took the form of 'musters', actual assemblies of the population, which were commonly supervised by the Governor or his deputy. Records of population musters exist for almost every year between 1790 and 1825. The method of mustering took many forms and was clearly much easier to organise when the population was small, wholly dependent on government stores and the area of settlement was limited. An early form of general muster is suggested by an order of 23 September 1795:

> A General Muster will be held on Saturday next, the 26th instant, at Sydney; on Thursday, the 1st of October, at Parramatta and Toongabbe; and on Saturday, the 3rd of October, at the settlement at the Hawkesbury,—at which places the Commissary will attend for the purpose of obtaining a correct account of the numbers and distribution of all persons (the military excepted) in the different afore-mentioned settlements, whether victualled or not victualled from the publick stores.[13]

With the order went the threat that those who failed to attend would 'be either confined to the cells, put to hard labor, or corporally punished'.[14]

For administrative convenience this muster took place over several days, but Governor Hunter ordered a simultaneous muster because the previous method

> . . . gave good time for imposters and other villains to practise their tricks and ingenuity by answering the first call at Sydney, where they have receiv'd provisions and slops as one resident in that district; on the day of call at Parramatta they have appear'd there, have been enter'd in the muster list of that place, and have been again victual'd and sometimes cloathed; the attempt has sometimes been made (and not always unsuccessfully) at the third muster.[15]

And in December 1796, in order to protect property when the population assembled at a muster, Hunter found it necessary to order that servants and labourers assemble one day and settlers the next.[16] In 1801 Governor King summed up what he thought to be an unsatisfactory situation:

> I have used every means to ascertain the numbers of every description of persons in the colony, which has not been done without much difficulty, owing to the scattered state they were in, the numbers who had obtained false certificates of their times being expired, and their being no general list whatever of the inhabitants . . .[17]

By 1809 the muster extended over a fortnight with different classes of people assigned different muster days.[18] By 1812 the period of muster had extended to almost one month[19], and in 1819 it took from 27 September to 12 November.[20] In 1820 expansion of settlement necessitated new methods: three new muster centres were added to the existing four and supervision was conducted by magistrates rather than the Governor and the Deputy Commissary-General.[21] In 1823 there were sixteen muster-stations[22] and 1825, twenty.[23] The accuracy of the picture of the population presented by the musters must vary between individual years, but in general they appear to be in significant error. The change to the counting by magistrates in 1820 was a failure. Governor Macquarie found the returns so inaccurate that he felt unable to send them to England[24], and even a second attempt by the magistrates was no more satisfactory.[25] As a result, in 1821, Macquarie reverted to his method of personal supervision of the muster. Not that his method would guarantee satisfactory results: in 1823 and 1825 the official population figures of 29,692 and 38,217 were made up partly from those who actually attended the musters, but also from an estimated 4,853 in 1823 and 5,203 in 1825 who were 'unaccounted for'.[26]

The Commissariat

The key economic institution in the settlement was the Commissariat. It was established to provide the supply of stores for the penal colony. From the beginning the task was a demanding one. In 1796 Commissary Palmer complained that he had been required to keep accounts in the same manner as the 'purser of a man-of-war',

> . . . but when the numbers to be accounted for are from three to four thousand persons, the books then required to be kept become very extensive, particularly those of the slop and victualling accounts.[27]

Moreover, he went on, his duties were more than those of a purser since he was

> obliged to keep a particular account of all kinds of stores received and expended in the colony, and to transmit accounts of all ordnance, naval, victualling, and hospital stores, that may be received and issued to the different Boards . . .[28]

And he foresaw great difficulties as both the numbers in the colony and the area of settlement expanded.

Already, by 1796, the Commissariat had expanded beyond its original purpose of a store of issue. It developed as the main market for local produce and the main retail outlet for supplies. Goods were sometimes bartered, but were more often sold on cash or credit. It was the most important source of foreign currency for the colony. It has been called 'Australia's first bank'.[29] The activities of the Commissariat were under the control of the Governors until 1813. Concern over misconduct in its administration then led to it being made directly responsible to the office of the Commissary General in London, itself a sub-department of the Treasury.

The activities of this institution were central to the functioning of the colony's economy for at least the first thirty or forty years. Its accounts and reports are the main source of economic statistics. These records would arise naturally in the circumstances of the operation of the business, but their extent, form and regularity of appearance were strongly influenced by a stream of complaints and instructions from London. The early Governors' dispatches regularly included such information as the stock of stores, rate of consumption, numbers and quantity of rations of those victualled at the store. The quarterly returns by the Commissariat of its accounts to the Treasury for auditing have been preserved.

Vital Statistics

Governors were required to report annually on the numbers of births and deaths. These reports, however, although headed births and deaths, record only some baptisms and burials. The position was summed up by the surgeon responsible for the returns in 1801:

> The state of births and deaths in this report is accurate as far as comes within our knowledge, but people die and children are born without our being made acquainted therewith.[30]

The various authorities deputed to record vital statistics—clergy, surgeons and magistrates—don't appear to have taken their duties very seriously, and difficulties became more pronounced as settlement spread. Moreover, the absence of Roman Catholic clergy until 1820 (except for 1803–08) seems to have meant the virtual exclusion of members of this sect from the returns. Indeed official figures for Roman Catholics do not appear until 1831.

Agricultural Statistics

Providing statistics of stock owned by the government in the early years of settlement was relatively straightforward. As agriculture expanded and increasingly was conducted in private hands, the collection of accurate statistics became much more difficult. One early method required military officers to put in a return on their own agricultural activities and constables to collect the information from settlers.[31] Later, and more systematically, the collection of agricultural information was combined with the population musters. For example, a return in 1800 based on musters of 18 July and 15 August gave numbers for sheep, cattle, horses, goats, hogs, acres in wheat and acres of maize to be planted, according to ownership by government or individuals.[32]

This discussion of types of statistics transmitted to Britain is not meant to be exhaustive. Returns on other areas such as customs revenue and land grants were also made. It is obvious that the reliability of the statistics varied greatly, as did the punctuality and regularity of their appearance; for instance, in 1821 the Colonial Office drew Macquarie's attention to the fact that there had been no land grant returns since 1812.[33] All these statistical reports may be regarded as official, but the relationship between the colonial and the British authorities meant that they were of the nature of documents reporting and accounting within government departments.

Although the contents of some would find occasional publication in a British parliamentary paper, they were never published on any regular basis.

There has been no discussion so far of the colony in Van Diemen's Land. Obviously it has its own story, but in terms of the nature, problems and significance of official statistics, it is broadly similar to that of New South Wales. After 1822 and to 1855 this type of statistical reporting by New South Wales and Van Diemen's Land continued, and they were joined by other Australian colonies, Western Australia, South Australia and Victoria, as they were established. Although these returns continued, their importance in representing Australian official statistics was greatly diminished when they were largely incorporated in a single, annual volume.

THE BLUE BOOKS 1822–1855

The mainstream of official statistics in Australia begins with the *Blue Books*, the annual statistical returns of the Australian colonies to the Colonial Office. When self-government was obtained in 1855, the *Blue Books* were transformed into the *Statistical Registers* of the second half of the nineteenth century. *Blue Books* were not limited to Australia: all British colonies had to make the same type of statistical returns. Their emergence reflected the new imperial situation following the loss of the American colonies and the end of the Napoleonic wars.

In 1788 colonial affairs centred in the hands of the Home Office, but were administered simply as part of the general business of that department. Moreover, other departments such as Treasury, Admiralty, Ordnance and Customs had their own officials in the colonies who were responsible directly to them. A significant change took place in 1801 when colonial administration was turned over to the recently-created office of Secretary of State for War. War precluded much attention being given to the colonies, until the appointment of Lord Bathurst in 1812 heralded a sustained period of reorganisation. Continuity in the office was maintained, since Bathurst retained his post until 1827 and his Under-Secretary, Goulburn, stayed with him until 1822. Their achievements have been highly rated:

> [They] unquestionably created a Colonial Office where none existed before, and in so doing they performed a task which was essential if the British Empire was to survive. To build a central machinery which could furnish information for the ministry and parliament on colonial affairs was the first step toward the reorganization of the empire in the nineteenth century.[34]

The continuing war probably delayed Bathurst from giving his full attention to the colonies until 1815, when the long-run overhaul of colonial administration began. Legal, economic, financial, social, military matters, all needed revision. Central to change and to efficient administration was the systematic gathering of information. Initially, the *Blue Books* were seen by Bathurst as supplying the financial data.

> He first introduced the preparation of what were called the 'Blue Books', which name is now even adopted in Parliamentary documents; and when in my evidence before the Canada Committee in 1828 I stated my opionion 'that it was expedient that the most unqualified publicity should be given both in the Colonies and the mother country to all pecuniary accounts, appropriations and matters of finance,' I only stated the opinion which had led to the adoption of this Blue Book system, which system as far as I have been able to ascertain, has been approved by the most rigid economists.[35]

The origin of the term 'Blue Book' appears to lie simply in the colour of the report cover. It was sufficiently institutionalised by 1829, that when, in a dispatch Governor Darling referred to the 'Crown Book'[36], Under-Secretary Hay replied that this had been noticed by the Secretary of State, and that 'I am directed to acquaint you that the original name given to this compilation, that of the "Blue Book", is preferred'.[37] An early reference to the term was in 1817 when returns were made to a House of Commons Select Committee on Finances. The Committee had requested information from the responsible government departments concerning office holders in the colonies: office, possession or reversion, salary, name and date of appointment. Some departments were unable to provide this information in full. In its reply the Colonial Office named only fourteen officers in New South Wales (headed by the Governor) and four in Van Diemen's Land.[38] It was probably this request from the Finance Committee which brought home to the Colonial Office its lack of information. In the same month it dispatched to the colonies forms which were to be filled in by all office-holders and collected by the Governor.[39]

The annual system of reporting by *Blue Book* was initiated with its dispatch from London in March 1822 to the Governors of the colonies. It was accompanied by a circular from Bathurst which began with a formal explanation:

> I have had occasion to remark that a want of a regular form of transmission of detailed information respecting the financial resources of His Majesty's Colonies, and the several branches of their expenditure, is a deficiency which creates much inconvenience to the public Service.[40]

Bathurst went on to list the five main divisions of the book and to discuss the sort of information required. The topics reflected British preoccupation with the cost of the colonies: 'Abstract of the Nett Revenue and Expenditure'; 'Schedule of Taxes, Duties, etc.'; 'Military Expenditure'; 'Establishment'; and 'Schedule of the Fees, etc.' The Governors were informed that in future the books should be returned 'as soon as possible to this department after the close of every year'. Further, more general, information was required in a circular of April 1823, relating to 'Population'; 'Exports and Imports'; and 'Currency'.[41] In the event, the first *Blue Book* for New South Wales was completed for the year 1822.

The table of contents of the first *Blue Book* consisted of the eight subjects listed above and at the bottom of this page was printed 'This Book and the Duplicate of it must be returned to the Colonial Office'. The inside pages had printed headings indicating in more detail what contents were required; the entries made in New South Wales were entirely hand-written. In length it was made up of 77 folios, not all of them with entries, with almost a half being given over to 'Establishment'; details were there required relating to each office holder, beginning with the Governor. The importance of the West Indian Colonies at this time is suggested by the population section which has headings referring to 'Free Blacks' and 'Slaves'. In New South Wales these pages were ignored and there are later entries for the civil and military populations.

The birth of the *Blue Book* in New South Wales was difficult. Governor Brisbane was unable to complete a return for 1821, and in May 1823 was sent a reproof from the Colonial Office urging him to '*lose no time*' sending a return for 1822[42], for which fresh forms were enclosed. The timing was already late for 1822, because, as the Colonial Office later admitted, 'unfortunately, in consequence of accident, [they] were not sent to you as soon as to the other Colonies'.[43] In January 1824 Brisbane could reply only with a summary statement of finance, pleading that this 'altogether new' form of presentation of information was 'attended with so much labor'.[44]

He was not able to dispatch the 1822 *Blue Book* until March 1825. He believed it 'to be as accurate as the time and the nature of so complicated an undertaking will admit of, for a first attempt'.[45] For its part, the Colonial Office had continued to be laggardly: it did not send the 1823 Book to New South Wales until April 1824.[46]

There was no Book from New South Wales for 1824. After 1824 this annual report was always presented, but delays, recriminations and explanations continued.

In June 1828 the Secretary of State wrote firmly to Governor Darling:

> It is impossible for me to imagine why so little care seems hitherto to have been taken to send home the Blue Book regularly and in due time . . . I anxiously hope that you will not render it necessary for me to remind you again of His Majesty's Pleasure upon this subject.[47]

He went on to order that the New South Wales Colonial Secretary should take responsibility for the *Blue Book*. The Colonial Secretary's problem, apart from overwork, was that of obtaining satisfactory accounts on time from the various officers responsible. For the past three years, although the *Blue Book* was compiled in his office, 'I did not consider that I was answerable for the financial Statements which it contained, any further than as to the correctness of the transcription'.[48] Now that he was to be held personally responsible for their 'correctness', an immense amount of work was involved to 'put them into an intelligible form'. As a result, and because the 1828 *Blue Book* had to be printed, he could send only one incomplete copy in July 1829.[49]

The complete book was dispatched ultimately in October, and on the last page the Colonial Secretary cautiously wrote:

> I certify that this Book has been compiled under my immediate inspection; and that the several Statements and Returns contained in it are as accurate as the means in my power have enabled me to make them.[50]

Delays continued. The 1829 *Blue Book* was not sent from New South Wales until February 1831. Again the Colonial Office had been late in sending the blank Book; again there was pressure of work on the Colonial Secretary; but on this occasion he also pointed out:

> that the printed Books, which are sent to us to be filled up, are, in most of the Forms, not applicable to this Colony, and that our Returns must therefore be less perfect than they otherwise would have been.[51]

1833 brought copies of two circulars dispatched on the same date from the Colonial Office. One was a reminder of an increasing need for punctuality because of parliamentary interest; the other more positively made a contribution to punctuality since it was accompanied by six blank copies of *Blue Books* as a contingency reserve.[52] However, in March 1840 the Colonial Office had still not received the 1838 *Blue Book* and the Secretary of State firmly reminded Governor Gipps of 'Chapter 5 of the Printed Book of Regulations, Page 51' which forbade him to pay 'the first Quarter of the year's Salary to the Colonial Secretary unless he shall have delivered the Blue Book for the previous year to the Governor for transmission to this Office'.[53] The Governor responded promptly but shifted the blame from the Colonial Secretary:

> . . . finding every exertion which I have hitherto used ineffectual to expedite returns from the different Heads of Departments, which are required for the compilation of this Book, I have this day given an order that no salary shall be issued to any person whomsoever, from whom returns for the Blue Book may be due on the 1st of March in every year.[54]

In January 1841, Lord Russell heartily commended Gipps' action[55], but several months later came the order that the Colonial Secretary should not escape the penalty if he was laggardly; if other public officers had not punctually submitted their returns then the Colonial Secretary, as a stopgap, should submit an incomplete *Blue Book* on time.[56] Punctuality was now even more pressing because henceforth the *Blue Book* and the Governor's Annual Report accompanying it were to be submitted together to

Parliament. To assist in meeting this timetable the accounting period was changed from the calendar year to the year ending 30 September, and a tight schedule was imposed on Governors to transmit the *Blue Book* by 30 November.[57]

The Annual Report now put the Governor in the firing line. He was strongly reprimanded for not sending a report for 1839.[58] His 1840 report was '*not*' of the character required:

> The Report now before me describes merely the political and Judicial constitution of the Colony; whereas it was the object of the instruction to produce a review, retrospective and prospective, of the state and condition of the Colony, under each of the heads into which the Blue Book is divided.[59]

Gipps may have drawn some solace from a significant rider to this criticism: 'At the same time, I have pleasure in acknowledging the very satisfactory manner in which the Blue Book itself is prepared'.[60] What the Colonial Office required in the Annual Report involved the presentation of a variety of statistical information, and a later Secretary of State (Earl Grey) was to refer to it as 'the Statistical report on the State of the Colony'.[61]

The change to the year ending 30 September was short-lived. Governors complained of difficulties and strict comparability with earlier returns was lost. From 1844 the calendar year was again used and three months grace was allowed for preparation and dispatch.[62] This appears to have begun a period when the New South Wales returns were regarded as satisfactory. The fact that they were not dispatched until May rather than by 31 March was accepted apparently without comment by the Colonial Office.

New South Wales Blue Book: Size, Scope, Distribution and Accuracy

The changing size and composition of the New South Wales *Blue Book* between 1822 and 1855 reflects the increasing size and complexity of the New South Wales Government and economy, the changing British interest in New South Wales, and the production of statistics in response to local developments as well as British needs.

The 1822 Book consisted of 154 pages; it was 218 pages in 1830, 410 in 1840 and 803 in 1850. The inclusion of the census in the 1856 volume raised it to its peak of 1,020 pages.

The instruction for the contents of the 1821 *Blue Book* referred only to the establishment and to government financial matters. A broader coverage was indicated for 1822 with the addition of the topics of population, trade and currency. The 1825 Book had an appendix written in with results of the 1825 muster and some miscellaneous statistics.

In 1828 a wider range of subject matter was introduced into the *Blue Book*. Additional topics added to the printed table of contents, on which reports were required, included: Education; Agriculture; Manufactures; Mines and Fisheries; Grants of Land; and Gaols and Prisoners. These changes appear to stem from a new emphasis being given to the purpose of the compilation. In late 1828, the Secretary for State sent a circular to all Governors in which he made a very good case for the annual production of a wide range of official statistics. After referring to the importance of the *Blue Book*, he stated that an 'additional measure' would be for Governors to use their annual address to the legislature as a

> fit occasion for exhibiting in detail a view of the existing state of the Colony, and of exhibiting in a clear and methodical form such statistical information as is most important to a correct understanding of its past progress and future prospects.[63]

To this end he suggested a number of topics on which information should be gathered. The statement would then 'lead the mind of the governor himself to an exact scrutiny into all those circumstances which most affect the welfare'[64] of his settlement. For the Colonial Office, knowledge of this material would permit 'good government', because 'an exact summary of facts with a careful though brief enquiry into their causes and probable results will supply a deficiency which is daily felt'.[65] In 1836 a printed abstract of the 1836 census was included. What might be regarded as the first move towards the format of the *Statistical Register* was the inclusion in the 1841 *Blue Book* of a section headed 'Printed Returns' (pp. 384–395) which presented economic and demographic statistics over a period, often from the 1820s, to 1840. In 1843 this became a section of 13 pages headed 'New South Wales: Statistical Returns: From 1822 to 1842', and it was in fact a paper printed for the Legislative Council. These returns, normally covering ten years were included in each subsequent *Blue Book*, and by 1855 had reached 44 pages. They normally arose from annual figures entered in earlier *Blue Books*. Other printed matter entered the *Blue Book*: returns of New South Wales banks, exports and imports; in 1855 the large section relating to Taxes, Fees, Revenue and Expenditure was mainly printed. It should be emphasised that overwhelmingly the largest section of the *Blue Book* remained the civil establishment, which in 1851, for example, made up 274 pages, almost one-third of the total.

The *Blue Book* began, and essentially remained, a hand-written document. Initially the Colonial Office appears to have envisaged a production run of two. On the cover of the New South Wales Book for 1822 was printed: 'This Book and the Duplicate of it must be returned to the colonial Office'. But another copy was made and retained by the Governor. Following representation from colonial legislatures the Secretary for the Colonies agreed they should retain a copy. In the case of New South Wales he instructed Governor Bourke in January 1837

> to lay [a copy] annually before the Legislative Council . . . It is highly proper that the Council should have access to these Returns, and the knowledge that they will be subjected to the scrutiny of that Body will serve as an additional motive to correctness, to those officers in the various Departments, to whom you must look for the details of which the Blue Book is composed.[66]

At the bottom of the contents page of the 1836 Book was the additional statement: 'Triplicate to be retained for the Governor's information'. And added to this distribution in 1839 was: 'One for the Council, and the other for the Assembly'. An exception to the usual hand-written Book was the 1828 production. The Colonial Office wanted 30 printed copies to be prepared in New South Wales for a Parliamentary Committee. Printing posed problems and these were advanced by the Colonial Secretary as one reason for the lateness of the return:

> I shall only observe on this subject that those, who have experienced the expedition with which such things are done in London, can form no idea of the difficulty of getting any printing containing what is called *Ruled-work*, or any thing out of the common way done in this Colony.[67]

New South Wales had considerable difficulty in arranging its financial accounts in the manner required for the *Blue Book*. This reflects both the casual accounting which existed and the lack of trained and experienced officials to introduce and operate the new system. Specific areas like the Commissariat and customs required overhaul. But pressure from Britain, auditing requirements and the growth of experience meant that by the beginning of the 1830s the accounts appear to have been in reasonable shape. Giving evidence to a Select Committee on Colonial Accounts in 1837, G. R. Porter, head of the newly-formed Statistical Department of the Board of Trade, said of the *Blue Books* in general: 'at first they were found to be exceedingly inaccurate'[68], but later he emphasised 'great and progressive improvement'[69] especially over the last two or three years. Among the returns which were 'very good' he included those of New South Wales and Van Diemen's Land.[70]

In two areas the New South Wales returns were admitted to be in significant error. One was vital statistics where no attempt for complete coverage was made until the middle 1850s. The other was agriculture. There are numerous warnings as to the usefulness of the agricultural statistics; a very strong assessment was made as late as 1859:

> It is much to be regretted that information of so much importance . . . should be left to the casual and unchecked collection of the constabulary . . . It would be a mere waste of time to enter upon an analysis of figures in which no one believes . . .[71]

Blue Book: Other Colonies

Van Diemen's Land produced its first Book for 1822, the same year as New South Wales, and maintained annual delivery without a break. Two other colonies began completing their Books once they had overcome early settlement problems. Western Australia began in 1834 and South Australia in 1840. Victoria began in 1851, immediately after separation from New South Wales. As with New South Wales, these *Blue Books* reflected growing local concern with statistics, and small volumes of official statistical returns began to appear semi-independently of the *Blue Book* themselves. Possibly the earliest such volume was in Van Diemen's Land. In response to a request from Governor Arthur for a statistical coverage of his period of office, the Colonial Secretary produced the *Statistical Return of Van Diemen's Land for the Years 1824 to 1835*. It contained forty-six tables.

CENSUSES

New South Wales

The first formal census of the modern type in Australia was held in New South Wales in 1828. It had been recognised that the previous proclamations by the Governor calling free citizens to muster had no legal force, and this census was authorised by Act of the New South Wales Legislative Council (9 Geo. IV., No. 4) dated 30 June 1828. It was described as 'An Act for ascertaining the number, names, and conditions of the Inhabitants of the Colony of New South Wales; and the number of Cattle; and the quantities of located, cleared, and cultivated Land within the said Colony'.[72] In framing their first census New South Wales administrators were of course aware of the English model of 1821, but in fact they appear to have been more influenced by Australian conditions and to have followed in the tradition of the musters. Information was obtained for New South Wales relating to age, sex, occupation and religion and for housing in Sydney. Details of 'class' were also required.

> The Column for the 'Class' is to be filled up with one of the following Abbreviations, according to the Circumstances, viz., B.C., for Born in the Colony; C.F., for Came Free; F.S., for Free by Servitude; A.P., for Holding an Absolute Pardon; C.P. for holding a Conditional Pardon; T.L., for Holding a Ticket of Leave; C., for Convict; C.S., for Colonial Sentence; and G.S., for Government (or Assigned) Servant.[73]

This concern with civil status reflected the continuing penal aspect of the colony: of a civil population of 30,827 over 12 years of age registered at the census, roughly three-quarters had been or were convicts. Other information obtained in the census related to numbers of stock and the area of cultivated land.

What was distinctively new in this census was the distribution of printed forms by responsible persons 'by whom, as well as by the respective Householders, who can write, each Form is to be signed when duly filled up'.[74]

How accurate was this first census? One observation in 1836 noted that all population enumerations in New South Wales 'are considered very inaccurate by those who know the colony well, especially that of 1828, when the settlers were apprehensive of the establishment of a poll tax'.[75] This assessment of the 1828 census was repeated, perhaps not independently, in a paper read to the Statistical Society of London in 1849.[76] An official recognition of inaccuracy in the total count is in a note appended to the 1828 return in the *Blue Book*. It declared that account should be taken of 'Runaway Convicts in the Bush', 'Persons who have no fixed Place of Residence' and 'Omissions that may have occurred', but that in total these 'do not exceed 2,000 persons'.[77]

Censuses in New South Wales were carried out in 1833 and then after only three years in 1836, presumably to adapt planned five-year periods to the British decennial census dates which began in 1801. The five-year interval was maintained in New South Wales from 1836 to 1861. After 1828 the agricultural section of the census was dropped, and in 1833 and 1836, possibly because the Governor was sympathetic to public sensitivity, civil condition was simply distinguished as free or convict. Between 1841 and 1851, when the question was put for the last time, ex-convicts were identified. The census of 1841 was said by a contemporary to have been 'taken from the principle laid down in the former Census Acts of England, with such alterations as the nature of our society and our circumstances rendered expedient'.[78] Supervised by the Colonial Secretary, E. Deas-Thomson, this census showed 'a marked advance over all preceding enumerations'.[79] As well as a more detailed population census there was an enumeration of housing in New South Wales. In the 1846 census two new lines of inquiry, education and birthplace, were added to the seven of 1841; results were now presented in fifty-six tables instead of five.[80] The 1851 and 1856 censuses were very similar to that of 1846; the 1856 census, the first after self-government, was introduced by a report analysing the returns.

Other Colonies

Beginning in 1841 the Port Phillip district was distinguished in the New South Wales censuses; by then the population was 11,738 compared with the 224 of 1836. Legal separation from New South Wales was accomplished in 1851, and the only census conducted by the Victorian authorities before self-government was in 1854—in the middle of a population explosion brought on by the gold discoveries. Formally it was in the hands of the Registrar General, and the British example was drawn upon heavily. British schedules were adapted by W. H. Archer, the Assistant Registrar General, 'to the circumstances and requirements of the Colonial Census'[81], and the information was published in the British form 'to comply with the expressed desire of scientific men at home, that the statistics of every part of the Empire should be drawn up on one uniform plan'.[82] There was little time for preparation for this census, and the Registrar General emphasised the difficulties he faced.[83] In the event, the census showed a growth of population from 77,345 in 1851 to 236,798 in 1854. There is further discussion of this census in a later section.

There were censuses in 1841, 1844, 1846 and 1851 in South Australia. The 1841 census appears to have classified the population by age and district only. The later censuses added conjugal condition, religion, occupation and housing.

In this period the population of Western Australia was very small. The Registrar General in 1848 claimed that the count of that year was the first 'systematic census', although earlier, almost annual enumerations existed.[84] In 1848 the total non-Aboriginal population was 4,622 and was classified in districts by age, conjugal condition, religion and occupation. Agricultural information was also obtained. By the next census in 1854, convicts had been introduced and the population was 11,976. At both censuses some information was collected on Aboriginal numbers.

Censuses began in Van Diemen's Land at a date considerably later than in New South Wales. They were held in 1842, 1843, 1848 and 1851. In 1842 the population of 57,420 was classified for each district by age, conjugal condition, civil condition, religion, occupation and housing. There was little change in the schedule over the four censuses. Like New South Wales, Tasmania was a convict colony and 'civil condition' specified whether 'free' or 'bond', and within the free group ex-convicts were distinguished. An assessment of these censuses describes them as being 'of doubtful accuracy'.[85]

CONCLUSION

Three main vehicles of official statistics have been identified for the period from the foundation of Australia to 1855. Up to 1822 attention was directed to a wide range of reports for the British authorities, a large proportion of which came directly from the Governor's office. From 1822 annual *Blue Books* of statistical information, designed by the Colonial Office, were the most important means of reporting. Local influences increasingly affected the character of these books, and the practice developed of retaining copies in the colonies for local use. The Governor remained formally responsible for their production, but the actual statistical collating devolved on to a public servant, usually the Colonial Secretary. The third type of official statistic was the census, the first being held in 1828 in New South Wales. The form and the timing of the censuses were decided in the colonies.

What was achieved in the Australian colonies must be seen in the context of developments in British official statistics. Although decennial population censuses began in 1801, it was not until the 1830s that attention was directed towards making some general use of the statistical material generated by individual government departments. For this purpose the Statistical Department of the Board of Trade was formed in 1832. Its head was G. R. Porter, a distinguished statistician, and it is claimed that under him 'the incoherent mass of periodical tables then prepared was for the first time reduced to orderly and comprehensive returns, accompanied by lucid explanations of the meaning and limitations of the figures . . . and giving to it a comparative character by including the figures for a series of years'.[86] Further evidence of the growing interest in the social usefulness of statistics was the formation of the Statistical Society of London (later Royal Statistical Society) in 1834, the function of which, according to its prospectus, was to 'procure, arrange and publish facts calculated to illustrate the condition and prospects of society'.[87]

It was easier to impose the collection of such statistics on the colonies, than to negotiate their introduction into Britain. The annual production of statistical material in some thirty colonies throughout the world, required by the *Blue Book*, was a significant statistical achievement. Colonial practice was ahead of Britain's. Not until 1854 was the first Statistical Abstract produced for the United Kingdom: it covered the years 1840 to 1853 and was a mere 27 pages in length.[88] The Statistical Returns prepared for the Legislative Council in New South Wales in the 1840s stand comparison with it.

At the beginning of the 1850s the five small Australian colonies, with a total population of some 400,000, were producing statistics relating to their societies which were impressive in quality and range. Their small bureaucracies had become accustomed to the discipline of the annual production of statistical material to meet the standards of an outside authority. The impact of self-government remained to be seen.

PART II

COLONIAL STATISTICS 1855–1900

INTRODUCTION

WHEN THE AUSTRALIAN COLONIES of New South Wales, Victoria, Tasmania and South Australia obtained self-government in 1855–56, they no longer had the obligation and discipline of producing statistics to meet the requirements of the Colonial Office. These statistics had been required to assist in the administration of an empire, but it has been shown that the colonies had already taken some steps to produce statistics to meet local needs. Now it was entirely for the colonies themselves to decide on the range and quality of their statistical records. Inevitably, there was a transition period and equally the responses of the colonies, although there were marked similarities, were different. What stands out in this period is the statistical work done in the two main colonies of Victoria and New South Wales. This work was associated in different periods with three distinguished statisticians: W. H. Archer and H. H. Hayter in Victoria and T. A. Coghlan in New South Wales.

In what follows, the discussion relates to three main themes: first, there is the production of an array of general statistics usually published in annual form; here, emphasis is placed on the volume which brought together these statistics, commonly called the 'statistical register', and on the 'year book' which commented on them.[89] The second theme is the carrying out of the regular population censuses, and the third bears on the relations between the colonial statisticians and the attempts to co-ordinate their work. These themes are combined within three historical stages associated with the three leading statisticians: Archer in Victoria between 1853 and 1874, Hayter in Victoria from 1874 to 1886 and Coghlan in New South Wales from 1886 to the end of the century. In these periods the focus is placed on these particular colonies, but work in other colonies is also considered.[90]

W. H. ARCHER AND OFFICIAL STATISTICS 1853–1874

W. H. Archer was born in 1825 in London. In 1841 he took employment with the Medical, Invalid and General Life Assurance Co. as a clerk under the actuary, F. G. P. Neison. Converted to Roman Catholicism in 1848 he took a professional interest in Catholic friendly societies, and in 1850 became the managing actuary to the Catholic, Law and General Life Assurance Co. This position could not be sustained by the company, and Archer, following his brother, migrated to Melbourne in 1852.[91]

Archer's statistical apprenticeship and development were obtained when, for the first time, the systematic collection and analysis of social and economic statistics were being attempted in England. This 'statistical movement' has been identified by historians as one of the significant features of the period.[92] Its main institutional aspects were the foundation of the Statistical Society of London (later Royal Statistical Society) in 1834, and the establishment of two government institutions: the Statistical Department of the Board of Trade in 1832 and, in 1837, the General Register Office to collect and collate figures on births, deaths and marriages.

In the 1840s a strong emphasis was placed on the need for accurate social statistics, especially those bearing on health and education, so as to obtain the knowledge with which to reform and improve society.[93] Two statisticians of the period had particular influence on Archer. One was the great William Farr who had a special interest in medical statistics; he corresponded with Archer throughout his life. The other was Neison, Archer's original employer. He was a professional statistican of standing, and his criticisms made him 'something of the *enfant terrible* of social statistics in the 1840s'.[94] Archer was later to say that 'all my Studies and previous habits of life have been moulded under the ablest Actuary in England . . .'.[95]

Archer's arrival in Melbourne in November 1852 was propitious. Victoria had been established as a colony separate from New South Wales in 1851, and until self-government was obtained in 1855, effective power lay with the Lieutenant-Governor and his nominated Council. The new colony needed able administrators, and the gold bonanza helped to provide the means to pay for them.[96] More immediately, in January 1853 an Act was passed for the civil registration of births, deaths and marriages[97] and, in February 1853, as Archer put it: 'the Colonial Secretary . . . placed in my hand the Act . . . requesting me to draw up a general plan for the guidance of the Registrar General, and rules in detail for the Deputy Registrars of Births and Deaths'.[98]

Archer's instructions on 25 February were 'at a moment's warning both unexpectedly and unprepared'.[99] Nevertheless, he was able through two communications on 10 March and 22 March to respond quickly and fully to his commission, and the Colonial Secretary expressed his satisfaction: 'Let every arrangement be made as far as possible to carry the system proposed into effect—emendations and alterations may be made according to circumstances'.[100]

Archer was assisted, no doubt, by the fact that he brought with him from England 'the labors of many years under Mr. Neison'.[101] Indeed, his proposals drew heavily on English experience and practice. In his 'Preliminary Remarks' he strongly recommended that the districts defined for registration and for the population censuses should be identical. Unless this was done 'a thousand social problems of vital interest to a state must remain wholly unsolved'.[102] The absence of this identity in England had drawn Neison's strong criticism in 1845.[103] In another and marked improvement on English practice, Archer recommended more details in the birth, death and marriage schedules 'in accordance with a report made by a Registration Committee appointed by the Council of the Statistical Society of London'.[104]

It is clear that in his proposals Archer saw himself as the agent for the establishment of the profession of statistics in the Australian colonies. He noted that the Act called on the 'Chief Registrar' to provide annually a general abstract of the number of births, deaths and marriages. He continued:

> The proper compilation of such a document can be done by a Statist only. In England this duty has been performed by William Farr in a way to raise that nation in a Statistical point of view, to a high position in the eyes of the scientific and legislative world. And it has brought him into communication with the ablest statists on the continent, where the System of Numerical Observation has been carried to a degree of refinement, and a scientific excellence worthy of emulation by every state; particularly by the Colony of Victoria, in which is opened up a new and rich field for the cultivation of that most important branch of modern Philosophy Vital Statistics. The Government Statist of Victoria would doubtless find ready and willing operators in every direction; as all scientific minds must at once see the value of the peculiar developments likely to be manifested under the very singular social condition of the Inhabitants of this Colony. [105]

The whole emphasis of Archer's recommendations was on the collection of social statistics, especially as in the English tradition, those that bore on health and education:

> After the great mass of material has been stored, then will come the necessity of analysing it, classifying it and deducing from it the general laws that govern our existence in relation to health, disease and morals. [106]

Some particular areas in which Archer thought work could be done included 'the Sanatory Condition of the Registrars' Districts, and the state of Crime, Lunacy and Education with the extent of disease and intemperance among the general population'. [107]

Along with making recommendations for registration of births, deaths and marriages, Archer had been asked to prepare the *Blue Book* and a consequent collection of general statistics. Such tasks had been performed in the colonies in the office of the Colonial Secretary. In his report, Archer recommended in a few lines that the Registrar General, as one of his minor duties, should prepare the *Blue Book*. It may be that Archer thought it natural that the task should accompany his person. In fact, this was a development of significance. For the first time, the collation of general statistics was to be performed by the officer responsible for collecting and analysing an array of vital and social statistics. What had begun was the establishment of the Registrar General as the statistical officer for the Victorian Government.

Archer began the preparation of his first *Blue Book* on 11 March, the day after his first report. A major problem was to obtain the statistical returns from the heads of various government organisations: Archer found that not all returns had been made, and of those that had, only five were satisfactory; the ultimate threat of stoppage of salary had to be invoked. The *Blue Book* was completed by 21 July to the Governor's satisfaction, and Archer was then given the task of writing the accompanying dispatch. Concurrently with the preparation of the *Blue Book*, he threw himself into setting up the administrative system for the registrations of births, deaths and marriages.

W. H. Archer
University of Melbourne Archives

Archer's ability and vigour were recognised to the extent that he was made Acting Registrar-General from 1 July to the end of the year, but his hope of being confirmed in that position was not fulfilled. He was informed in August that the office was to go to the Governor's private secretary, Major E.S.N. Campbell. Archer, who had previously been promised by the Governor that, whatever the decision, he would retain a degree of independence, was made Assistant Registrar-General. [108] It is reported that the two men 'worked well together and held each other in high esteem'. [109] After Campbell's death in January 1859, Archer was made Registrar-General, a position he held until 1874.

It took several years for the system of registration to come into full operation. Clergymen had to be instructed on the use of marriage forms; medical men educated in the use of William Farr's nosological table. A colony-wide network of deputy and assistant registrars to record births and deaths had to be established. For this latter task Archer rode the countryside during 1853 and 1854 recruiting suitable men who could cope with distance and scattered habitation.[110] He selected all sorts: 'settlers, medical men, clerks of the peace and petty sessions, schoolmasters, postmasters, chemists and druggists, and sometimes storekeepers'.[111] But he preferred medical men: 'they are about a good deal among their patients; they know personally or by repute most other people in their district, and are found to be intelligent and efficient agents'.[112] In April 1855, 127 registration officers were employed and 133 ministers of religion registered marriages.[113] It was thought best, as far as possible, to avoid connection with the legal system. Popular distrust would have reduced registrations. Indeed, Archer was warned that some Irish, especially recent arrivals, avoided the Registration Officer: 'They suspected something disadvantageous would eventually result from it—on the part of the Government'.[114]

When the whole system was in place, Archer believed he had created something unique.

> England has nothing so complete, nor has any other country that I am aware of. Victoria has therefore the honour of being the first to work out so uniform and elaborate a system; and hence the Mother country may learn something in the practice of the youngest of its Colonies.[115]

Victorian Annual Statistics

In 1852 a statistical collection was printed by order of the Victorian Legislative Council entitled *Statistics of the Port Phillip District, (Now the Colony of Victoria) for the Year 1850.* Only thirty-five pages in length, it had its origins in the *Blue Book* and in form was simply a continuation of the series begun for New South Wales in the 1840s.

Archer was responsible for the next collection for 1852 entitled *Statistics of the Colony of Victoria*. This began a series which appeared annually under this name up to 1873, becoming the *Statistical Register* in 1874. This volume of forty-one foolscap pages was produced by Archer in the first hectic months of his appointment, and he felt it necessary to introduce them with an apology:

> The 'Annual Statistics', being a formal document, the precedents of previous years have been strictly followed, and no important modification of the Tabular Matter has been made. The information had been applied for according to the old forms, before my appointment, and nothing was left for me but to make use of the particulars obtained in the old way.[116]

However, he went on to promise better things:

> In future, more precise and methodized results will be obtainable with regard to the Statistics of the Colony, His Excellency having honored me with commands to prepare an 'Annual Register,' which, I trust, will prove a truthful reflex of the Social and Physical Condition of Victoria throughout every coming year.[117]

It was probably the Governor's 'commands', referred to by Archer, which were responsible for his production in 1854 of a curious volume entitled *The Statistical Register of Victoria, From the Foundation of the Colony with an Astronomical Calendar for 1855.*[118] The work of 447 pages gave principal space to the astronomical calendar; a rural calendar; a list of legislation, proclamations and proceedings of Council; an examination of the Registrar General's Department; and miscellaneous statistics between 1841 and 1853.

Archer saw the book as 'a humble attempt to commence a series of Registers, or Books of Reference, that may from time to time faithfully reflect the progress of this extraordinary Colony'. He acknowledged that 'mechanical difficulties' and 'pressure of multifarious duties' had given it 'somewhat of a fragmentary character'. And this was in spite of the 'warm interest' of Governor La Trobe, who 'read over with me several of the proofs . . .'.[119]

As well as this single volume of Archer's, produced in 1854, the mainstream of *Statistics of the Colony of Victoria* continued. The 1853 introduction apologised, as it had in 1852, for the quality of the statistics. It maintained that what was 'urgently needed' was 'a more reliable and efficient system of collecting statistics, than that which has hitherto prevailed . . .'.[120] The agricultural statistics, which were collected by the police, were acknowledged to be most inaccurate. As a result, the Registrar General said that he

> proposed to try this year the experiment of collecting, through the medium of the Registrars, instead of that of the police constables, the materials for the various returns required for the Blue Book . . .[121]

The use of his own department in the collection of agricultural statistics further strengthened the role of the Registrar General as the statistical officer for the government.

At first, the Deputy Registrars had had only moderate success in their attempts to gather the agricultural statistics:

> It is more difficult in many cases to obtain information from the parties who alone are able to supply it, owing to prejudice or misconception of the objects of an enquiry which they deem to be inquisitorial, and it has happened in some instances that not only have gates been barred and dogs unloosed on the approach of the Collectors, but abusive language has been showered upon them, as the supposed precursors of increased taxation.[122]

The 1855 *Statistics* were largely given over to the agricultural returns, but the Registrar General had to admit that 'that accuracy of the information . . . must . . . remain a matter of opinion . . .'.[123] However, rapid improvement was claimed. For the 1858 returns, the Registrar General noted that 'the collectors are unanimous in bearing testimony to the general willingness of the people to afford them every information and assistance'.[124] And by the early 1860s Archer could boast of the achievement:

> Upon the whole, the machinery employed to procure these statistics may be considered to answer its purpose admirably well, and I believe that the returns, both in point of accuracy, and also in regard to the interesting nature of the details they exhibit, are fully equal, if not superior, to the agricultural statistics of any other country.[125]

1861 marks something of a landmark in the development of the annual statistics. Previously, the contents had not been organised in any systematic manner; in 1861 the format below was developed, and was maintained for the rest of the century.[126]

STATISTICS OF THE COLONY OF VICTORIA FOR THE YEAR 1861

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Not only was the formal shape of the volume determined in 1861, but the general thrust of the statistics had been made clear—especially by developments over the previous three years. During this period, the space devoted to statistics (not including the Civil Establishment) grew by some 275 pages. New material included: vital statistics; population material from the census; much more detailed information on foreign trade relating to value, quantity and country of origin or destination; a section on wages and prices; employment and power in manufacturing; and sundry statistics on migration, railways, intestate estates and banking.[127]

Between 1861 and 1872, the last year for which Archer was responsible, developments were not so marked. The statistics grew by some 75 pages, including friendly societies and more material relating to crime and punishment. The most significant change took place in the collection of agricultural and manufacturing statistics, where, Archer's claims notwithstanding, all was not well. At least by 1863, tenders were being called for the jobs of the collectors.[128] In 1868 and 1869 Crown-lands bailiffs were used. Then in 1870 because, it was claimed, of the expense and the dissatisfaction with the quality of the figures, the job was given to the local authorities.[129] Advantage was taken of amendments to the local government Act in that year to force local authorities, by means of their rate assessors, to collect the statistics. The result was much more detail in agricultural and manufacturing statistics, which were claimed to be 'most accurate'.[130]

Annual Statistics in Other Colonies: Production and Uniformity

Developments in other colonies followed a similar pattern to that in Victoria. But in the transition from the limited statistics of the *Blue Book* to the more wide-ranging statistics collected and presented primarily for local needs, Victoria was the pace-setter and example. In New South Wales annual volumes of statistics were published by the Colonial Secretary until 1857. From 1858, following the Victorian precedent, this responsibility was given to the Registrar General, C. Rolleston, who in that year produced the first *Statistical Register* for New South Wales. He saw his task as combining a condensed *Blue Book* with the annual statistical volume 'under a new title . . .'.[131] He wrote immediately to Archer that he would 'like to be favored with a copy of all your general Tables, viz—Agricultural, Commercial, Mining, Manufacturing etc'.[132] He later acknowledged Archer's leadership: 'I don't pretend to compete with you in the field of statistics. I am rather a humble disciple . . .'.[133]

Within a year of taking on his new statistical task, Rolleston saw himself as the 'Government Statist',[134] and rather grudgingly accepted one of the duties.

> For the information of the general public, who are not very well disposed to wade through the mass of Tabular Statements of which the Statistical Register is composed, it seems to be considered desirable that the compiler should enter upon a sort of analysis of the returns, point out the more striking features, and shew, with the aid of as few figures as possible, the comparative progress of the year past with others that have gone before it,—in fact, that the Government Statist should do that which is more properly the business of individual inquirers, and of the people themselves.[135]

He thought there had been an improvement in New South Wales statistics, but 'we can never hope to attain such perfection as has been arrived at in the sister Colony of Victoria with regard both to punctuality and reliability'.[136]

In 1862 the statistics in the *Register* were classified under seven headings, similar to, but not identical with, those in Victoria. In the same year, Rolleston repeated earlier comments on the unreliability of the agricultural statistics, and recommended strongly that New South Wales should adopt the Victorian method of using the officers of the Registrar General to collect them rather than the police.[137]

The first *Statistical Register* appeared in South Australia for the year 1859. The first Queensland *Register* for 1860, the year after separation from New South Wales, was modelled closely on the example of that State.[138] The lack of uniformity in the coverage and presentation of the statistics in these annual volumes was felt keenly in some colonies. The superintendent of the South Australia census reported that Rolleston and the New South Wales Government urged action, and that:

> The Government of Victoria expressed a hope that the views of Mr Archer, to the effect that the three colonies should 'not only unite in regard to the enumeration of the people, but to recast and assimilate, in concert, all 'blue book' and other statistics, on a scientific and practical basis,' would meet with the concurrence of the Government of New South Wales and South Australia . . .[139]

The South Australian Government responded to these views and the 1859 *Statistical Register* was the result. Nevertheless, in South Australia this was regarded as only a 'preliminary step' towards unity.[140] Pressure for a meeting of statisticians built up, and it is claimed that the decisive initiative came from the Governor of South Australia, who obtained the backing of the British Government.[141] He wanted a meeting in order to:

> . . . not merely arrange there the forms of the most important and general statistical tables common to all these Colonies, but more especially investigate the process of obtaining, in the first instance, the details summed up afterwards in the annual statistical returns of each Colony.[142]

Melbourne was recommended as the meeting place 'as the most central capital',[143] and the conference took place during October–November 1861.

There were local reasons for the conference, but what was happening was representative of a wider scene. The rapidly growing acceptance in advanced countries of the need for official social and economic statistics had led to international moves for statistical co-ordination and standardisation. The first international conference was held at Brussells in 1853. The year before the Australian meeting, the European International Statistical Congress was held in London in 1860. Archer had written to Farr that he was 'unable to get to England'[144], but all the self-governing Australian colonies sent representatives.

The Melbourne Conference was attended by the Registrars General of Victoria, New South Wales and Queensland and the South Australian Superintendent of the Census. Discussion centred on obtaining agreement on practical steps to achieve a degree of uniformity in content and classification of the annual statistical publications. Archer 'presided' and was the dominant figure.[145] At the final meeting:

> Documents illustrative of the system pursued in Victoria relating to the collection and tabulation of Blue Book and Census data were handed in . . . Mr Archer undertook to construct a model of a Statistical Year Book based on the resolutions of the conference just held such as would be suitable for Victoria and to submit it for consideration and final approval to the representatives of the other colonies as soon as it would be possible to do so.[146]

Population Censuses

Since the taking of the census had always been in local hands, the obtaining of self-government could not be expected to bring significant changes. The Victorian experience at this time was somewhat different from the other colonies. The 1851 census had been carried out as part of New South Wales, but separation meant the establishment of its own census administration while at the same time society was transformed by the inrush of population. Such change was being experienced that it was felt necessary to follow the 1851 census with two more within a short period—in April 1854 and March 1857. Responsibility for the 1854 census was given with very short notice to the newly-created office of the Registrar General. Previous censuses in the Australian colonies had been conducted by the Colonial Secretary. In his Report, the Registrar General described the circumstances of the difficult environment he found:

> . . . a new country . . . about the size of England, Wales and Ireland united, devoid for the most part of public roads . . . and in some parts absolutely impracticable for travellers . . . These natural difficulties were in no small degree enhanced by the prejudice which unfortunately existed in the minds of many of the uneducated portion of the community against what was conceived to be an inquisitorial proceeding, and by the unsettled habits of a large body of the people perpetually on the move from one gold field to another by various routes, and whom it was exceedingly difficult to overtake. The absence of recent and complete maps was also much felt.[147]

The speed of preparation gave little time to prepare the population or to train the enumerators: 'Many of the 45,880 schedules were almost as difficult to decipher as an Egyptian inscription; not to mention the Chinese returns . . .'.[148] The schedules themselves were of the form employed in the United Kingdom, adapted by Archer to the conditions of the Colony. Questions were directed towards age and sex, religion, conjugal condition, education, occupation and birth place. As compared with the 1851 census, there were no questions on 'civil condition' (convict, freed or free) and housing. The form of presentation of the results of the census followed the example of the British Census of 1851, especially since it was 'considered advisable . . . to comply with the expressed desire of scientific men at home, that the statistics of every part of the Empire should be drawn up on one uniform plan'.[149] There was nothing novel in the questions on the census schedule, apart from the classification of occupations. In 1851 the British had adopted a classification made by William Farr, and in 1854 Archer followed suit. The problem of occupational classification was to develop as an important cause of disagreement between the colonial statisticians. It is discussed later.

There were reservations concerning the accuracy of the 1854 census. More confidence was placed in the results of the 1857 census, because of the more careful preparation and the more settled nature of the population. Housing was added to the list of questions.[150]

Along with the attempts to produce uniform annual statistics in the second half of the 1850s, discussions and negotiations began to hold a census in 1861 in all the Australian colonies on the same date as that in Great Britain and Ireland. Victoria, New South Wales and South Australia were the main proponents. Archer wrote to Farr in 1859:

> The Governor of South Australia is desirous to aid in securing a uniform Census throughout these Colonies in the Year 1861, when the South Australians are to have their Census. The Registrar General of New South Wales and myself, wish to have it on the day of the English Census in 1861 & I am anxious at all events that Victoria and England should be enumerated in the same 24 hours. If you could kindly moot this at your Congress, and stamp the notion with your approbation, it will filip the Australian Governments and support my efforts amazingly.[151]

The South Australian Superintendent of the Census indicated some of the benefits that resulted from this attempt at co-ordination:

> Considerable correspondence ensued with the Imperial and Local Governments in the arrangement of the facts to be inquired into, and the mode of procedure to be adopted in tabulating the results obtained, the effect being a valuable addition to our knowledge as respects existing methods, and the formation of the basis of one uniform system . . .[152]

In the event, four colonies, Victoria, New South Wales, South Australia and Tasmania held their censuses within 24 hours of 7 April 1861. For the first time other colonies adopted the occupational classification used by Britain in 1851; the South Australian Superintendent had a slightly different emphasis:

> The general grouping is precisely similar to that of Victoria, which was recommended as most serviceable by Mr. Archer, the Registrar-General; . . . It is also practically the same as that of Great Britain . . .[153]

Only three colonies, Victoria, New South Wales, and South Australia held their censuses on the same day in 1871.

Assessment

'We are all delighted to have hit upon you Mr. Archer. You have the head that we wanted.'[154] La Trobe's early assessment was to the point. Victoria was extremely fortunate to obtain as its first statistician a man who had just completed his statistical training in England when, for the first time, considerable attention was being paid to the recording, collection and analysis of a large range of statistics.

There were two outstandingly weak areas of statistics in the old *Blue Books*. One was vital statistics which depended mainly on the clergy; the other was agricultural statistics which were collected by the police. Within a few years both had been tackled by Archer. Vital statistics were comprehensively recorded by agents responsible to the Registrar General, and with a wealth of detail far ahead of English practice. Much the same was done for agricultural statistics; a yearly series, and then only with very limited information, did not begin in England until 1868. Improvements were not limited to these two areas, but extended to the general range of annual statistics and the census.

Archer was the dominant colonial statistician. No other statistician had his connections with the wider world in England. His annual statistics were the model for the other colonies. He helped provide the leadership for obtaining uniformity in the schedules and timing of the census. Through his stature, and by combining a number of statistical roles in the one office, he paved the way for the later emergence of the specialised position of government statistician in Victoria and other colonies.

Archer's second decade was not as productive in statistical terms as his first. There is the appearance of administering an office rather than acting creatively. He was involved in political and administrative manoeuvres, studied law, added 'registrar of titles' to his duties in 1868 and then in 1874 was promoted from Registrar General to Secretary of Lands and Survey. During this period, in 1861, 1867 and 1873 he produced 'statistical essays' on 'the progress of Victoria'. These essays, which briefly discussed tables of Victorian statistics, were occasioned by 'exhibitions' held in Melbourne. No significant analysis of statistics emerged. In 1869, in a letter to Farr, he sought advice on administrative matters, complained that administering did not leave him time to work on a mortality problem, and hoped that Farr would make use of 'our Victorian data'.[155]

How much of the credit for developments in Victorian statistics from about 1860 should be shared with H. H. Hayter (see later) is not clear. Hayter was a clerk in the statistical branch, and was later to agree that he had been 'in charge of the office since 1861', and that 'since I have been there' Victoria had tried to be 'foremost in the compilation of statistics'.[156] He also claimed full credit for the taking of the 1871 census.

Whatever the balance of responsibility on the second half of Archer's term, in 1873 he recorded his satisfaction with his own role and with the results:

> The statistical records of Australia are not excelled either in fulness or in accuracy by those of any other country; and as the statistical system initiated in Melbourne in 1853 is gradually being followed by statisticians in surrounding states, there is every reason to hope that, at no distant date, thorough unity will exist both of purpose and of action in relation to all the leading lines of statistical work throughout Australasia.[157]

H. H. HAYTER—GOVERNMENT STATIST OF VICTORIA

Hayter was born in England in 1821, migrated to Australia in 1852 and in 1857 began his long association with colonial statistics.[158] In May of that year he began a period of temporary work for the Registrar General, which included the task of collecting agricultural statistics from an area in western Victoria.[159] In 1859 he was appointed clerk in the Statistical Branch of the Central Office of the Registrar General; he was soon chief clerk and carried considerable responsibility for the production of Victorian statistics. In 1874, when Archer left, the Statistical Branch was separated from the Registrar General's Office and established as a separate organisation in the Department of the Chief Secretary, 'to deal exclusively with statistics'.[160] Hayter was placed at its head as Government Statist, a position he held until his death in 1895.

The establishment of this separate organisation with Hayter in charge points to the status that both the office and Hayter had attained. It may also represent the fact that the Registrar General's Office had acquired considerable legal duties[161], and that Archer was the only man who could span both the legal and statistical aspects. Once established in the new post, Hayter was soon acknowledged as the foremost statistician in Australia.

The Statistical Register

Hayter promptly used the name 'Statistical Register' to describe the volume of Victorian annual statistics. But, essentially, the volume had been created by the time he took office. No radical changes in structure took place, although the collection was improved in various ways. In trade statistics, for example, coverage was extended to include transhipments; more information was provided in such areas as government loans, crime and court activity, and individual manufacturing industries. Manufacturing was reclassified in the same manner as 'occupations' in the Victorian census.

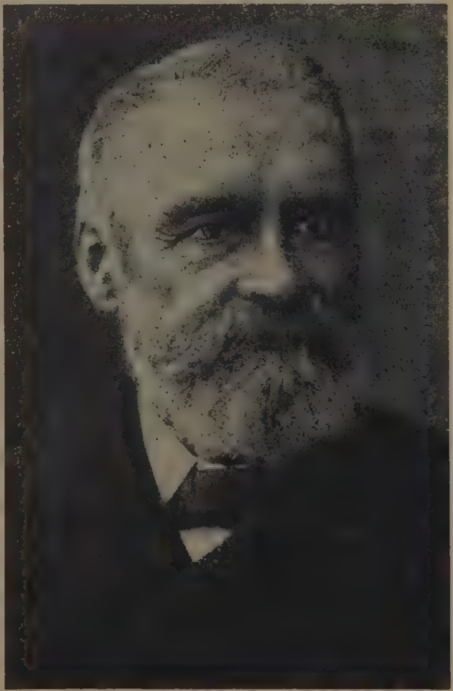
An insight into the methods of collection and compilation of the Victorian statistics was given by Hayter in 1879 in his evidence to the British Official Statistics Committee. The material used in the *Statistical Register* was acquired in a variety of ways, and required different degrees of processing. First, there were government departments which provided statistics in their annual reports and sometimes published them independently; they nevertheless provided statistics for the Government Statist on forms provided by him. Foremost in this group were Customs (trade statistics) and Railways. Other government authorities provided unprocessed or semi-processed material: one hundred and seventy local authorities returned figures on agriculture, manufacturing, private schools and population numbers on the Statist's forms—there was, for example, a schedule for each agricultural holding; statistics of crime were obtained from the police who filled in a form for each individual—27,000 a year; prisons, friendly societies, banks and savings banks all made returns; tables on births, deaths and marriages were compiled by the Statist's officers from the raw returns at the office of the Registrar General. Some statistics were obtained more directly by the Statist: the decennial census was carried out by him; the statistics generally supplied by local authorities, were collected by the Statist's temporary employees in areas not covered by the legislation—these included Melbourne, Geelong and outlying districts; data on wages and prices were collected by the Statist's staff from newspapers and journals, with the assistance of police in country areas; information on religion was obtained by correspondence with the heads of the different denominations.[162]

This array of material was obtained partly through legal powers given to the Statist, and partly by his use of personal persuasion and pressure. One way or another, he claimed he got all the statistical material he sought.[163] At the time, the permanent staff of his office who carried out this collection and compilation numbered eight and their annual salaries amounted to £2,700.

The *Statistical Register* was a significant achievement in international terms. The British Committee concluded: 'The system of statistics in this Colony has evidently been elaborated with much care, and appears to have been brought, under Mr. Hayter, into an unusually perfect condition'.[164] Hayter thought such a volume would be possible in Great Britain, and the Secretary of the British Committee was sufficiently impressed to recommend a new statistical department which would

> . . . produce annually a complete set of Blue Books, each forming a part or volume of one work, somewhat in the same manner as the several parts of the Statistical Register in the colony of Victoria.[165]

An immediate innovation of Hayter's in the 1873 *Statistical Register* was the inclusion of a small section of 'Australasian Statistics' for that year.[166] Hayter mentioned that the Governor of New South Wales, Sir Hercules Robinson, had attempted much the same thing for the last two years. In order to obtain the materials, Hayter drew up a form which he sent off to the other colonies to be filled in; he noted that some had considerable difficulty in obtaining the information.[167] Data on Fiji were added from 1878. In his introduction to the first issue Hayter said his aim was 'to make the tables as comprehensive and clear as possible, and they will, I believe, speak for themselves'.[168] In succeeding years this practice was followed, but from 1875 they drew extensive comment in the Victorian *Year Book.*



H. H. Hayter
Australian Town and Country Journal

Inter-Colonial Co-operation: Annual Statistics and the 1881 Census

In January 1875 statistical representatives of Victoria, New South Wales, South Australia and Tasmania met in Hobart to discuss presenting their statistics on a uniform basis. There was a problem in the absence of three colonies—Queensland and Western Australia had declined to attend and New Zealand had been given insufficient notice. One reason for the meeting was the request from Britain, reflecting the nineteenth century pre-occupation with the subject, for the supply of uniform crime statistics. More importantly, one of the resolutions of the Intercolonial Conference of 1873 had called for action 'to facilitate comparison between the official statistics of the various Australasian colonies . . .'.[169]

The statisticians, in their report, made a large number of recommendations which were, in the event, very imperfectly acted upon.[170] Hayter was able to congratulate the Victorian Government that most of the recommendations were intended to bring the other colonies to the Victorian standard. One important recommendation referred to the arrangement of trade statistics. In all colonies commodities were arranged in alphabetical order, and it was resolved that in future they should be classified in the same manner as occupations in the Victorian census—the Farr classification. Even Hayter was partly defeated here. The Customs Department complained 'they would have to alter all their books'[171], and Hayter used the Farr classification only in his summary tables in the *Year Book.*

The statisticians also recommended that the population census should be taken on the same day, and with the same schedules and compilation procedures as in the United Kingdom. In fact, the census was carried out on the same day, 3 April 1881, in almost every country in the British empire. But Hayter was bitter that New South Wales was the exception to the uniform compilation of census tables. The Hobart decision, being in general terms, had required further and more specific discussion. According to Hayter, New South Wales proved unco-operative while other colonies consulted and then followed the Victorian example. As a result the New South Wales tables 'especially those relating to the occupations of the people, differ widely from those of Victoria and the other colonies'.[172]

In his Report, Hayter included an account of the methods used in his office to process the returns and compile the tables. One aspect of the account which is particularly interesting is Hayter's claim that the use of a card to record the details of each individual was a world first.[173] He was proud also of his 'mechanical appliances', which he used to save clerical labour.

> I would particularly mention Edison's electric pen, which, as an instrument for multiplying copies of written documents, is perhaps unequalled; numbering machines of simple and correct action, specially made to the order of Messrs Semple and Ramsay of Melbourne; also a French calculating machine, designated *L'Arithmomètre*, by Thomas de Colmar of Paris.[174]

The Victorian Year Book

The great reputation that Hayter established depended in part on the presentation of the Victorian statistics in the *Statistical Register.* More important was the production of an annual 'year book', consisting of summary tables of statistics with considerable comment. It was a venture which probably had not been attempted elsewhere in the world on an official basis. In Victoria, as we have seen, somewhat similar publications had appeared occasionally, but they were more of the nature of statistical histories of the colony. Moreover, from quite modest beginnings, the Year Book expanded in scope and content far beyond Hayter's original plan. It was so identified with the man, that locally it was referred to as 'Hayter's Year Book' or simply 'Hayter'. The *Year Book* had its origin in September 1874 'as a report upon the Statistical Register', made 'without instruction', to the Minister of Hayter's department.[175] What was he attempting?

> . . . my first object will be to draw up such an analysis of the contents of the tables embraced in the several parts of the Statistics as may be of material assistance to persons whose business or inclination may lead them to consult that work.[176]

But, he continued, since some people may not have the *Statistical Register* or may find it heavy going:

> . . . it will also be my endeavour to make the Report as complete as possible in itself, and to that end I shall be obliged to quote somewhat largely from the figures embodied in the tables.[177]

The report, with only slight modifications, was very quickly published as the Victorian *Year Book*.[178] In his preface, dated October 1874, Hayter gave the reason:

> It was, however, considered desirable by the Government that the information contained in the Report should be disseminated somewhat largely, both in this colony and in Europe; and it was thought that if the work were issued in a pamphlet or book form it would be more convenient for reference than if circulated on the large-sized and somewhat formidable looking pages upon which the Parliamentary Papers of this colony are printed.[179]

With this encouragement, Hayter said he would produce a similar volume each year, and he proceeded to set out the philosophy that would guide him:

> It will be my endeavor in this succession of volumes to record facts with correctness and impartiality; to comment upon them only so far as may be necessary to elucidate them properly; to set up no theories except such as may be fairly deducible from the materials before me; and, in drawing inferences, to exercise perfect fairness to all sections of the community. By keeping these points steadily in view I shall, I trust, be able to give to the world a series of publications which will be of service to persons of many aims and ends not only in Australia but in the mother-country and elsewhere.[180]

The first issue of the *Year Book* contained 102 octavo pages of text which were further divided into 347 numbered paragraphs. It was firmly based on the statistics in the *Statistical Register*, and subjects were classified in the same manner. Comment was simple, in the main drawing attention to the totals in the tables and comparing them with the Victorian figures for the previous year. In vital statistics, however, Victoria was compared with England and Wales, often over a ten year period. Apart from this exception it could be said that the *Year Book* was confined to two year periods with almost no international or inter-colonial comparisons. In succeeding years the scope and nature of the *Year Book* changed markedly. In 1874, to meet the needs for publicity at an international exhibition at Philadelphia, sections were added on discovery and early history, geography, meteorology and climate.[181] In 1875 a much more substantial change was made: figures for the other Australasian colonies were used 'for the purpose of affording means of judging of the progress, condition, resources and comparative importance of each colony'.[182] In 1877–78 the standard for comparison was widened.

> . . . statistical data, not only relating to Victoria and the other Australasian colonies, but also to other British dominions and Foreign countries throughout the world. Such particulars, apart from the fact that they enhance the value of the work as one of general reference, are of great importance in showing the true position attained by this colony as compared with other portions of the civilised globe.[183]

In the 1885–86 edition, Hayter indicated the wide range of official and non-official sources upon which he drew. It is worth giving in full.

> In compiling the work, free use has been made, as usual, of the tables published by the Imperial Board of Trade under the direction of Mr Robert Giffen; the Reports of the Agricultural Department of the Privy Council Office; the Reports of the Registrar-General of England, Scotland and Ireland; the Reports of the Deputy Master of the London Mint; and other Imperial official documents. Occasional extracts have also been made from *The Statesman's Year-Book* (now ably conducted by Mr J. Scott Keltie); *L'Almanach de Gotha*; *McCarty's Annual Statistician* (San Francisco); *Mulhall's Dictionary of Statistics*; *Kolb's Condition of Nations*; *The Statist and British Australasian* (London Journals); *The Transactions of the Statistical Societies of London and Paris*; that excellent Melbourne publication *The Australasian Insurance and Banking Record*; and other works.[184]

As well as the expansion in coverage in the general body of the *Year Book*, substantial appendixes on various topics were added from time to time. All this meant a great increase in size: by the end of the 1880s it was published in two volumes and the 347 paragraphs of 1873 had become 1,749.[185]

The *Year Book* brought Hayter international acclaim and international honours.[186] In the 1873 edition he had viewed his task as the straightforward, impartial presentation and description of statistics. In 1879 he expressed the task of a statistical department in similar terms.

> I think the primary object of a Government Statistical department is to collect material for others to deal with. The function of a Statistical department is to write reports drawing attention to various matters, and instituting comparisons, but not to go deeply into the science of statistics.[187]

Hayter largely succeeded in his purpose. But he showed little explicit recognition that no array of statistics is impartial, that every fact is a theory. Inevitably, since one object of the *Year Book* was to publicise Victoria overseas, especially to encourage migration and investment, comment in it emphasised the virtues of Victoria as against those of other colonies. Moreover, Hayter admitted that in the *Year Book* he had gone further than simple description—'I draw inferences'.[188] In choosing areas for this, he was influenced both by his own competence and by prudence. He thought he had gone 'very fully' into vital statistics and crime[189], but as a 'Government officer' he should not argue the case of protection versus free trade.[190] He admitted that even the 'facts' could cause trouble.

> Religious feeling runs high in Victoria, and I have shown that in some sects crime is much more prevalent than in others; that is, going a little beyond recording the facts.[191]

It was not only religious feeling that was sensitive in Australia. In the 1877–78 *Year Book*, the first to include statistics of other colonies, his facts showed that 'crime is much more prevalent in New South Wales than in Victoria'[192] and he then moved on from description to explanation.

> . . . the three colonies to which criminals were formerly transported, viz., New South Wales, Tasmania and Western Australia are, as will readily be supposed, those in which crime is more rife than in the remainder which have always been free from the convict taint.[193]

To some extent Hayter's *Year Book* was a product of inter-colonial rivalry and competition.[194] Its success and prestige as a stimulating record of facts, not to mention the scope it gave for pressing Victoria's case, led to some resentment, especially in New South Wales. It was a major factor in encouraging that State to appoint its own statistician.

T. A. COGHLAN

Born in Sydney in 1855, Timothy Coghlan was young to be appointed in 1886 as the first holder of the post of 'Government Statist of New South Wales'. The origin of the position lay in profound dissatisfaction with the quality and presentation of the New South Wales statistics, especially as compared with those of Victoria. In 1886 Henry Parkes summarised the background.

> Some four or five years ago provision was made in the Appropriation Act for the salary of a government statist. Year after year we have had prepared a large volume of statistical tables—a very inconvenient volume, arranged in a very unscientific, not to say clumsy manner; and the object of the provision in the Appropriation Act to which I refer was that we might get some officer who would give parliament and the country something like a lucid exposition of the growth of the colony. Every one must see what a great advantage it would be if we had that work properly done—that must be seen very clearly when we compare our so-called *Statistical Register* with the book which is issued in Victoria.[195]

Finding a suitable person was difficult, and consideration was given to seeking out an Englishman. What the office required said George Dibbs, the Colonial Secretary, was 'a man of peculiar talents . . .'.[196] And certainly this is how Coghlan's qualifications were later to strike opponents of his appointment. Dibbs described him thus:

> Mr Coghlan was assistant engineer in the Harbours and Rivers Department. He is a member of the Institute of Civil Engineers, and I am informed a good mathematician, and has some literary attainments.[197]

Although his career as engineer had been most distinguished, there is little indication in the formal outline of his background of the qualities required of a government statist. To explain his change of direction, Coghlan simply says that he felt 'his calling was statistics and not engineering . . .'.[198] Dibbs maintained that Coghlan was the best applicant, but certainly Coghlan had been able to establish personal contact with Dibbs who, Coghlan said, 'adopted him as his protégé'.[199] Perhaps to appease critics, he was appointed on probation for two years.

The selection of Coghlan (at almost twice his previous salary), the establishment of the Statist's Office separate from the Registrar General and demands for economy, combined to make his appointment a short-run cause célèbre. It forced Dibbs' temporary resignation, and Coghlan says his first six months were 'chaos', and that for most of that period five of his seven clerks remained unpaid.[200] Immediately on his appointment Coghlan was sent to Melbourne to study 'the working of the Statistical Department . . .'.[201]

T. A. Coghlan
National Library of Australia

In this background there is little to indicate that within a few years Coghlan would be acknowledged as a master statistician. He not only produced official statistics, he commented and analysed. Yet statistics were only part of his interests, and by the start of the 1890s he had emerged as an outstanding public servant and adviser to government on economic and financial matters.

In the statistical field, the rapidity with which he wrought changes in the official statistics is remarkable. Within eighteen months of his appointment, publications began to testify to his statistical ability and to his vision of New South Wales society and economy. The developments in New South Wales official statistics will be examined through their production in four channels: the *Statistical Register*; the census report; *The Wealth and Progress of New South Wales*; and *The Seven Colonies of Australasia.*

New South Wales Statistical Register

Coghlan inherited a *Statistical Register* which, in its basic structure had not changed since Rolleston had arranged the 1862 edition into six subject areas: Religion, Education and Crime; Trade and Commerce; Mills and Manufactures; Monetary and Financial; Production; Miscellaneous. The 214 foolscap pages of the 1862 issue had become 370 in 1885. Precedent seems to have ruled, while the *Statistical Register* grew in size; old categories remained and new statistics were pressed into the old framework. In effect, it had become a jumble of information.

The 1886 *Register*, the first to be issued from the office of the Government Statist, was transformed. Although it was only slightly larger in size than the 1885 volume and presented much the same statistics, what stands out was the systematic and orderly presentation of information. It is possible here only to highlight a few of the more obvious changes. The category Religion, Education and Crime (a remarkable group!) was divided into two—Education, Religion and Charities, and Crime and Civil Justice. In the latter, crime statistics were arranged logically and Civil Justice had been moved from Miscellaneous. In the section Population, Immigration and Vital Statistics there were much more detailed vital statistics, and the price and wage statistics were removed. In Trade and Commerce the listing of imports and exports remained alphabetical, but there was more commodity detail and grouping was under more obvious names. There was a complete reclassification of manufacturing industries. Monetary and Financial for the first time included tables of government revenue and expenditure.

1886 was the year of greatest change: later years built on this framework. The 1889 edition was produced as an octavo volume of 594 pages with the advice that since it contained statistics only, it 'should therefore be read in conjunction with the "Wealth and Progress of New South Wales" '.[202] Coghlan maintained the awkward octavo format and his last volume for 1904 reached 1,251 pages. By then, the eight section classification of 1886 had become fourteen with a number of sub-divisions. The great expansion reflected new material: there was, for instance, a section of 88 pages on industrial wages; but the growth also resulted from the desire for better and more detailed figures.

The new *Statistical Register* was well received. From the beginning of 1896 it appears not to have been completely under his direction; then, because of the pressure of other public service work, he reduced his statistical activities by giving up 'the immediate control of the compilation of the Statistical Register . . .'.[203] Assessing the publication, Coghlan was well satisfied. He thought it had been 'recognised as, if not the best, amongst the best purely statistical registers published in any country'.[204]

The 1891 Census

For the 1891 census the colonies agreed on a common day, on a common core to the schedules and on the compilation of the returns on a uniform principle. This was an important achievement, and it meant that the major stumbling block for uniformity at the 1881 census, a common occupational classification, had been overcome. Agreement to use a common occupational classification in 1891 was significant, and not just because uniformity was desirable and the classification itself was an improvement on the old method. The new classification had been formulated by Coghlan and R.M. Johnston, the Tasmanian statistician [205], and had been opposed by Hayter. Its introduction symbolised the end of about forty years of statistical leadership from Victoria.

The occupational question was probably the most difficult one for the census-takers. Broadly speaking, the two main and related problems were to define occupations in an identifiable way and to classify them to permit useful conclusions. In 1851 in England, William Farr's occupational classification was adopted. It was based in the main on the materials used, because Farr, with his interest in medical statistics, thought a worker's materials were an important determinant of his health. In other words, he saw the census as yielding significant information on occupational morbidity and mortality. As we have seen William Archer, straight from England and with his own actuarial background, adopted (with some modification) the Farr system for Victoria in the 1854 census. Victoria maintained this system up to 1881, when all the other colonies, except New South Wales, agreed to follow the Victorian system.

At the pre-census conference of colonial statists at Hobart in March 1890, with Hayter as president, Johnston and Coghlan were deputed to draw up an entirely new occupational classification. Their position had been strengthened by strong criticism in England of the Farr system, and the use by Scotland of its own method in 1871. In particular, what undermined Hayter's position was the fact of England's partial departure from the Farr system at its 1881 census. The main change which was then made related to a new distinction between the 'occupied' and the 'unoccupied' population.[206] In Hobart, Johnston developed his criticism of the Farr system along these lines:

> . . . so far as minor groups or combinations are concerned this method was fairly successful, but as regards the principal classes of workers it could not form a guiding principle; for it is obvious that all classes of workers must often be related to the self-same materials, and separation into principal Classes could not possibly be based successfully upon this method. It is not surprising, therefore, that Dr Farr's classification should present many defects and anomalies. For example, Class II.—Domestic, and Class VI.—Indefinite and Non-Productive, hopelessly mixed up Breadwinners and Dependants. Similarly, Primary Producers, Distributors, and Manufacturers were indifferently mixed together under three very distinct Classes—viz., Commercial, Class III.; Agricultural and Pastoral, Class IV.; and Industrial, Class V. It is apparent that the lack of any clearly recognised principle for determining the limits of the great Classes themselves led the original Classifier into great perplexities; for we find *Fishermen, Veterinary Surgeon, and Farrier* grouped under Class *Agricultural and Pastoral*; *Chimney-sweep* grouped under workers in *Coal*; and the *Miner, Quarryman*, and other *Primary Producers* are found classed together with a moiety of the *Dealers*, along with *Night-soilmen, Artizans*, and *Manufacturers*.[207]

Coghlan, much more aggressively, defended past practice in New South Wales, and attacked the Farr system and Hayter's use of it.

> [In N.S.W. in 1881] a very different system was adopted, which, though marked by many imperfections, was a distinct improvement on all preceding attempts, and in many important particulars was superior to the pretentious classification adopted in the other colonies, which was merely a servile adaptation of the system employed at the previous English census.[208]

Moreover, he continued, Hayter's proposal to use the Farr system in 1891, would 'commit these colonies to the principle of remaining ten years behind the English compilers'.[209]

In drawing up their classification of occupations, Coghlan and Johnston were guided by some very general classificatory principles devised by Johnston[210], but more specific information is not available. They did not intend their classification to be used for medical purposes, but, in Johnston's words, to 'more fully meet the wants of the social economist and statesman . . .'.[211] The result was, according to Coghlan, 'not based on any previous system, and if there was any such it was unknown to the Conference'.[212] It consisted of seven classes divided into twenty-four orders and one hundred and nine sub-orders; sub-orders were divided into groups of occupations which were named at the conference, but whose adoption was left to individual statisticians.[213] To capture the essence of the change, Johnston's description of the main classes is set out below.

> The amended Classification is divided into seven principal classes. The first six embrace all independent *Breadwinners*; the seventh, or last class embracing all *Dependants*. The three important classes related to *Materials* are kept separate by regard to the relationship which their *differing services* bear to the materials which pass through their hands. Thus, Primary Producers of Raw Materials directly acquired by labour from natural sources, bring naturally into one class (Class V.) those engaged in Agriculture, Grazing, Fishing, Hunting, and Mining. Transporters, Dealers or Distributors, who effect no material change in Producers' materials, come naturally together in Class Commercial (Class III.); while all skilled, and unskilled modifiers or constructors of materials, in a similar way, come naturally together in Class Industrial (Class V.).
>
> The Domestic Class (Class II.) no longer includes wives and others engaged at home in domestic duties for which no remuneration is paid, nor dependent relatives or children.
>
> The Professional Class (Class I.) only includes those ministering to Religion, Charity, Education, Art, Science, and Amusement, and those connected with the General and Local Government, and in Defence, Law, and Protection.[214]

Johnston did not mention the rather awkward but inevitable 'Class VI.—Indefinite', which consisted of 'persons whose occupations are undefined or unknown . . .'.[215]

Of the Australian colonies, Queensland and Western Australia did not attend the Hobart conference, but all followed its recommendations concerning collection and compilation. The new classification of occupations was substantially followed at the first Commonwealth Census in 1911.

Coghlan made a General Report ('Illustrated with Maps and Diagrams') on the 1891 census of New South Wales.[216] It was the most comprehensive and longest (334 pages) statistical report on a census in the Australian colonies. It included an account of the taking of the census, but this was almost incidental to his analysis of the findings. The analysis was characterised by a strong historical emphasis, and in particular there was a masterly account of the growth of population in New South Wales since 1788. Thrown in was a chapter on the history of life tables and the construction of one for New South Wales. For good measure, the last chapter consisted of humorous anecdotes from the census.

A New South Wales Year Book

Coghlan's first *Year Book,* published in 1887, was entitled *The Wealth and Progress of New South Wales 1886–87.* It began a series with this title and produced by him of thirteen issues, the last being for the year 1900–01. The first paragraph of the first volume suggests both the historical approach adopted and an important impulse behind the work.

> The following pages, which are designed to trace the progress of the Colony during the first century of its history, show that New South Wales maintains its position as the leading province of the Australasian Group.[217]

Early progress, Coghlan continued, would be dealt with 'in the form of an historical sketch', but since the separation of Queensland in 1859, the period 'has been treated statistically'. [218]

In the succeeding volume for 1887–88, Coghlan remarked on the 'uneventful' nature of Australasian history, so that 'the history of this continent is comprised almost entirely in that of its industrial progress'.[219] By implication, a *Year Book* such as his own, dealt with the essence of Australasian history. And, he continued, in explanation of the title of his series: 'To illustrate the wealth and trace the progress of the Colony is the aim of this volume . . .'.[220] The list of contents in this issue, consisting of twenty-three individual chapters, shows that Coghlan was able to deal with topics in a much more natural manner than Hayter. The Victorian *Year Book* was constructed in the same manner as the *Statistical Register*, so that topics were constrained into eight groups. Coghlan was able to devote eight chapters to the relatively unchanging information of the broadly historical and geographical type, whereas Hayter combined this material in a few sketchy pages.

In the fourth year of issue, 1889–90, Coghlan was able to make a significant change in method of presentation because of the production of a new companion volume.

> The necessity of comparing the progress of New South Wales with that of the other Colonies, except on the most important points, is obviated by the publication of 'The Seven Colonies of Australasia,' which deals with the Colonies as a whole, as well as with their individual resources.[221]

Comparative material remained in the local volume, but emphasis could be placed very firmly on developments in New South Wales itself. Lacking the encyclopedic comprehensiveness of Hayter's volume, the work seems more purposeful. In Coghlan's discussion of the statistics, there is of course a good deal of formal comment — a noting of the figures and brief description of institutions. But the overall impression is of the authoritative handling of the material, as Coghlan shows himself to be historian, economist and man of affairs in administration and politics. Take the example of one of Coghlan's central concerns. In 1888–89 begins a historical discussion of real wages through a focus on money wages and prices. In 1890–91 this becomes a seventeen page section of a new chapter headed 'Industrial Progress', which historically 'is naturally divided into eight periods, each with some distinguishing characteristic . . .'.[222] In 1894 'Industrial Progress' becomes 'Industrial History' and warrants a full chapter of sixty-three pages; it has now broadened, but its final thrust is still 'the condition of the workers'.[223] What can be seen developing within the framework of the official *Year Book* is the genesis of Coghlan's great historical work, not published until 1918, *Labour and Industry in Australia.*[224]

Throughout the thirteen editions there was a massive accumulation of statistical information, with comment, about New South Wales. Information was broadened in scope and extended in time. Primary statistical material was moulded into such constructs as real wages, export price indexes and even estimates of the national income of New South Wales. It meant, of course, a great growth in size of *Wealth and Progress*. The 577 pages of 1886–87 had become 968 by 1892; in 1893 about one-third more print was fitted to the page, and the 828 pages of that year grew to 1,043 by 1900–01.

Coghlan gave New South Wales the *Year Book* it sought. The fourth issue was greeted by the *Sydney Morning Herald:*

> The great statistical handbook of the Colony, which has now become invaluable as a book of reference . . . nearly 900 pages full of information upon every point relating to the material, physical, and moral welfare of the people of this colony . . . pages of interesting explanatory letterpress, by which the points brought out in the various tables quoted are emphasised in an instructive way.[225]

In Victoria, on the other hand, all was not well with the *Year Book*. Hayter died in office in 1895 after some years of ill-health and financial problems, and economies meant it was a number of years before a new government statist was appointed; indeed, there was no issue of the *Year Book* between No. 21 of 1894 and No. 22 of 1895–98. In 1886 it was Parkes in the New South Wales parliament who had deplored his State's backwardness: in 1895 it was the turn of a Victorian parliamentarian.

> He . . . believed the Government Statist of New South Wales was paid £800 a year, and, judged by the way in which he had managed his business, Mr. Coghlan had been worth £80,000 a year to New South Wales, because he had published works which had been most magnificent advertisements for that colony, just as in the olden times Mr. Hayter's publications did magnificent work for this colony. He . . . esteemed Mr. Hayter very much, but towards the end of that gentleman's career he did not retain his initial vigour, and there were defects in the *Year Book* which ought to be remedied forthwith.[226]

An Australasian Year Book

Coghlan's decision to begin a new series of *Year Books* covering all the colonies has been noted. The first issue for 1890 was entitled *A Statistical Account of the Seven Colonies of Australasia.* The series, consisting of eleven editions, ended in 1902–03, the last two, in deference to the fact of Federation, being called *A Statistical Account of Australia and New Zealand.*

In the first issue Coghlan set out the purpose of the series.

> To afford information by which the progress of these Colonies may be gauged is the object of the present work, which aims to exhibit at a glance the position held by each Colony individually, and by the country as a whole, with regard to all matters connected with its moral and material welfare. Such an account cannot fail to be of interest — so much has been attempted in directions in which old-world experience was of little avail, and so much has been accomplished in the development of the material resources of a new land, and the social well-being of its people.[227]

It was a smallish volume of 186 octavo pages in which the contents were divided, and the commentary made, in much the same way as in *Wealth and Progress*. There were also 'Concluding Remarks' which express the emotion and confidence of 1890.

> Enough has been said, however, to show how these great Colonies, from the humblest beginnings, have grown and expanded into important provinces, peopled with a race of hardy, enterprising, and industrious colonists, with free institutions such as are enjoyed by few nations in the old world, and without those social and caste impediments which are in older countries so great a hindrance to the march of civilization. [228]

Succeeding issues of this series reflect Coghlan's increasing knowledge and maturity in much the same way as did developments in *Wealth and Progress*. New topics were added and significant interpretative essays were built around the tables of figures in such areas as capital imports and land settlement. Inevitably, the size of the volume grew, reaching 543 pages by the seventh issue for 1897–98. The next issue for 1899–

1900 with 836 pages was much larger: the imminence of Federation induced Coghlan to insert historical chapters on all the colonies. In the 1901–02 issue Coghlan began a new chapter on the 'industrial progress' of Australasia. The final issue, dated 1 December 1904, was a voluminous 1,042 pages and included material on Federation and the Constitution. This was Coghlan's last *Year Book*: he left for England two months later. It could be seen as a monument to his work: a mass of statistical information, coherently ordered and arranged, and always accompanied by authoritative discussion and interpretation. The end of the series left a gap which was only partly filled by the first Commonwealth *Year Book* in 1908.

CONCLUSION

It is not simply local pride and hyperbole that have judged the official statistics of the Australian colonies in the second half of the nineteenth century to be of the highest international quality, both in content and presentation.[229] What may be thought surprising is to find such an achievement in colonies remote from the main-stream of statistical development, recently settled and having just obtained self-government.

To a considerable extent the achievement was, for a number of reasons, a legacy of British colonial rule. First, the colonies had been required to produce official statistics on an annual basis; collection was not based on periodic censuses as in the United States. Second, the statistics had to be of a range and quality to satisfy the British authorities, who required them for efficient administration. Third, the statistics had to be brought together by a single officer, the local Colonial Secretary, who took some final responsibility for their accuracy and their presentation; there was therefore a central statistical authority and this contrasted markedly with the British position. Finally, the authority was required to present all the relevant statistics of the colony in a single volume—the *Blue Book*. As an offshoot of these developments, it was natural for the colonies to begin the production of a consolidated volume of annual statistics for their own use.

Self government meant the inheritance of a most favourable institutional arrangement. But adaptation and progress were not automatic: freedom and changed circumstances gave the opportunity for stagnation. That there was such a successful outcome depended on a number of factors, of which the most important was the discovery in this small community of three remarkable statisticians.

W.H. Archer, well-trained and fresh from the invigorating statistical climate of England arrived in Victoria in 1852 just as the public service was being shaped. Previously, the Colonial Secretary, as part of his numerous duties, had taken responsibility for the census, the *Blue Book* and the compilation of the statistics for local use. In the English tradition, it was probably inevitable that responsibility for the census would be given to the Registrar General's Department, but Archer's presence led to that office taking over all the statistical work done by the Colonial Secretary. At the same time, the Registrar General set up a prestigious system of recording vital statistics, and began collecting more general statistics in his own right. In Victoria, then, central statistical control was continued, and Archer's status and authority gave the Registrar General the informal mantle of government statistician. His methods and standards set the pace for the other colonies.

In 1874, in the newly-created post of Government Statist of Victoria, Henry Hayter had a more specialised role. He was no longer responsible for what was now the routine collection of vital statistics, but took charge of the census, the collection of a variety of statistics and the production of the *Statistical Register*. He maintained Victorian leadership in statistical standards, and added a new dimension to official statistical activities through the innovation of his famous *Year Book*, which publicised Victoria through informed comment on the statistics.

Colonial governments needed good statistics. There was also early recognition that the *Statistical Registers* could be used overseas in a manner which could encourage the flow of capital and migrants. Hayter's *Year Book* went a step further in that direction. In this situation inter-colonial rivalry and competition were important in ensuring some flow-on of best statistical practice. British pressure and the natural desire to harmonise census-taking also raised census standards. Inter-colonial rivalry was greatest between Victoria and New South Wales, and was a major factor in the establishment of the post of government statist in New South Wales. Timothy Coghlan was the first appointment in 1886, and as Hayter's innovations and drive were beginning to decline, Coghlan was able to build on Hayter's work. He improved dramatically the conventional array of statistics in the New South Wales *Statistical Register*, and he made important improvements in the census schedule. His most significant achievement in official statistics was through his *Year Books*. With imagination and vision he translated the tables of figures into an interpretative picture of his society, and this involved the formulation of statistical constructs out of the raw data. Not only was this done for New South Wales, it was also extended to meet the more complex challenge of Australasia. In their genre the works are classics.

Federation on 1 January 1901 had many implications for official statistics in Australia. In the short run, a new Commonwealth Statistician could draw on the output from the centralised statistical offices in the States. It would be a challenge, however, to maintain the progress that had been achieved by his distinguished colonial predecessors.

NOTES

[1] *Historical Records of Australia,* Series I, Vol. I, pp. 11–12.
[2] *H.R.A.*, I, I, 14.
[3] *H.R.A.*, I, I, 15.
[4] *H.R.A.*, I, I, 52–4.
[5] *H.R.A.*, I, I, 63.
[6] *H.R.A.*, I, I, 80.
[7] *H.R.A.*, I, I, 203.
[8] *H.R.A.*, I, I, 279–82.
[9] *H.R.A.*, I, I, 401–2.
[10] *H.R.A.*, I, I, 456.
[11] ibid.
[12] *H.R.A.*, I, I, 51.
[13] *H.R.A.*, I, I, 678.
[14] ibid.
[15] *H.R.A.*, I, II, 17.
[16] *H.R.A.*, I, II, 69.
[17] *H.R.A.*, I, III, 8.
[18] T. A. Coghlan, *General Report on the Eleventh Census of New South Wales,* 1894, p. 48.
[19] Coghlan, p. 51.
[20] Coghlan, p. 60.
[21] Coghlan, p. 62.
[22] Coghlan, p. 68.
[23] Coghlan, p. 69.
[24] *H.R.A.*, I, X, 380.
[25] *H.R.A.*, I, X, 533.
[26] Coghlan, pp. 68–9 and *N.S.W. Blue Book,* 1828, p. 146.
[27] *H.R.A.*, I, I, 651.
[28] ibid.
[29] S. J. Butlin, *Foundation of the Australian Monetary System 1788–1851*, Melbourne, 1953, p. 48.
[30] *H.R.A.*, I, III, 55.
[31] *See*, e.g., *H.R.A.*, I, II, 208–9.
[32] *H.R.A.*, I, II, 632.
[33] *H.R.A.*, I, X, 408.
[34] H. T. Manning, *British Colonial Government After the American Revolution 1782–1820,* New Haven, 1935, p. 483.
[35] R. W. Horton, *Exposition and Defence of Earl Bathurst's Administration of the Affairs of Canada when Colonial Secretary during the years 1822 to 1827, Inclusive,* London, 1838, p. 40. Horton was Under-secretary of the department 1822–1827.
[36] *H.R.A.*, I, XV, 239.
[37] *H.R.A.*, I, XV, 411.
[38] *British Parliamentary Papers* (H.C.), 1817, XVII (129), 231–42.
[39] *Colonial Office,* 324/104, Feb. 24, 1817.
[40] *H.R.A.*, I, XIV, 223.
[41] *C.O.* 854/1, 113.
[42] *H.R.A.*, I, XI, 83.
[43] *H.R.A.*, I, XI, 244.
[44] *H.R.A.*, I, XI, 206.
[45] *H.R.A.*, I, XI, 552.
[46] *H.R.A.*, I, XI, 252.
[47] *H.R.A.*, I, XIV, 222–3.
[48] *H.R.A.*, I, XV, 69.
[49] ibid.

[50] *N.S.W. Blue Book*, 1828.

[51] *H.R.A.*, I, XVI, 99.

[52] *H.R.A.*, I, XVII, 194–5.

[53] *H.R.A.*, I, XX, 579–80.

[54] *H.R.A.*, I, XX, 753–4.

[55] *H.R.A.*, I, XXI, 188.

[56] *H.R.A.*, I, XXI, 316–7.

[57] ibid.

[58] *H.R.A.*, I, XXI, 436.

[59] *H.R.A.*, I, XXII, 36.

[60] *H.R.A.*, I, XXII, 98.

[61] *H.R.A.*, I, XXVI, 701.

[62] *H.R.A.*, I, XXIII, 22–3.

[63] *C.O.*, 323/208, 72.

[64] *C.O.*, 323/208, 73.

[65] *C.O.*, 323/208, 74.

[66] *H.R.A.*, I, XVIII, 656–7.

[67] *H.R.A.*, I, XV, 69.

[68] *H.C.*, 1837, VII (516), p. 100.

[69] ibid., p. 194.

[70] ibid., p. 100.

[71] *Statistical Register of N.S.W. from 1850 to 1859*, Registrar General's Report, p. 8.

[72] N.S.W. Legislative Council, *Votes and Proceedings*, 1828, p. 43.

[73] 'Government Notice: Census for the year 1828', reprinted in Coghlan, p. 71.

[74] ibid.

[75] R. Montgomery Martin F. S. S., *History of Austral-Asia Comprising New South Wales, Van Diemen's Island, Swan River, South Australia, etc.*, London, 1836, p. 134.

[76] J. T. Danson, 'Some particulars of the Commercial Progress of the Colonial Dependencies of the United Kingdom, during the Twenty years, 1827-46', *Quarterly Journal of the Statistical Society of London*, November, 1849.

[77] *N.S.W. Blue Book*, 1828, p. 147.

[78] Ralph Mansfield, *Analytical View of the Census of New South Wales for the Year 1841; With Tables Showing the Progress of the Population during the previous Twenty Years*, Sydney, 1841, p. 3.

[79] Coghlan, p. 81.

[80] ibid., p. 85.

[81] *Census of Victoria*, 1854, Population Tables, Report, p. vi.

[82] ibid., p. iii.

[83] ibid., p. v.

[84] *Government Gazette of Western Australia*, Dec. 19, 1848, p. 1.

[85] D. N. Allen, *The Development of Official Statistics in Tasmania* (Dissertation for Diploma of Public Administration, University of Tasmania, 1965), p. 46.

[86] J. Koren (ed.), *The History of Statistics: Their Development and Progress in many Countries*, New York, 1918, Chapter by A. Baines, 'Great Britain and Ireland', p. 374.

[87] ibid., p. 385.

[88] *Statistical Abstract for the United Kingdom In each Year from 1840 to 1853: First Number* (1854).

[89] For a listing of the official publications, see Jennifer Finlayson, *Historical Statistics of Australia: A Select List of Official Sources*, Canberra, 1970.

[90] Anyone researching in this or related fields must be grateful for the pioneering work of Craufurd D. W. Goodwin, *Economic Enquiry in Australia*, Durham, N.C., 1966.

[91] *Australian Dictionary of Biography*, Vol. 3, p. 41.

[92] M. J. Cullen, *The Statistical Movement in Early Victorian Britain: The Foundations of Empirical Social Research*, Hassocks, Sussex, 1975, Preface. H. Westergaard refers to the period 1830–49 as 'The Era of Enthusiasm' in which 'the most conspicuous progress was made in England', p. 137 of *Contributions to the History of Statistics* (First Edition, 1932. Reprinted 1968 by Augustus M. Kelley, New York).

[93] Cullen, *Statistical Movement*, p. 93.

[94] ibid., p. 102.

[95] W. H. Archer Papers, National Library of Australia, MS 105/1, p. 21.

[96] 'This very gold of course has enabled us to *buy* (and I purposely put it in this vulgar but sound light) appropriate talent in every department of our Government', H. S. Chapman, (Attorney-General of Victoria, 1857–59) addressing the London Statistical Society. This statement immediately followed a reference to Archer. See 'The Industrial Progress of Victoria as connected with its Gold Mining'. *Journal of the Statistical Society of London*, 26, 1863, p. 426.

[97] 16 Vic., No. 26.

[98] *Report from the Select Committee of the Legislative Council on Agricultural and Horticultural Statistics*, 1856, p. 20. Statistical Memoranda of Mr Assistant Registrar-General Archer.

[99] Archer Papers, NLA, MS 105/3.

[100] Written on the back of the first page of Archer's submission, dated 29 March and signed by the Colonial Secretary, ibid., MS 105/1.

[101] ibid., MS 105/3.

[102] ibid., MS 105/1, p. 2.

[103] Cited in *The Statistical Register of Victoria, From the Foundation of the Colony with an Astronomical Calendar for 1855*, p. 112.

[104] Archer Papers, NLA, MS 105/1, p. 4. Here, as an example, are Archer's comments on the proposed Births Schedule.
'1 The birth place of the parents is omitted.
2 The marriage place of the parents is not given.
3 The number and sex of former children are omitted.
4 The Certificate of the Accoucheur, Nurse or other person present, is omitted.
5 The place of registry is omitted.' ibid., p. 3.

[105] ibid., MS 105/1, p. 9.

[106] ibid., MS 105/3.

[107] ibid.

[108] Archer's workbook headed 'Desiderata and Agenda', ibid., MS 105/5, 3 August 1853.

[109] *Australian Dictionary of Biography*, Vol. 3, p. 345.

[110] Archer Papers, NLA, see e.g. MS 105/18.

[111] *Report from the Select Committee of the Legislative Council on Agricultural and Horticultural Statistics*, 1856. Evidence of W. H. Archer, p. 2.

[112] ibid. Archer could not always pick and choose. His problems are suggested by his assessment of one of his early selections.

> He has much improved and evidently bestows great pains on them [the Registers]. He has a prosperous Store, frequented by the people round about for miles. He is postmaster also; and has a horse upon which he goes about in search of cases of birth etc. He is evidently very painstaking and desirous to succeed. The only objection, and a very serious one, is his bad spelling; but constant reference to a Dictionary and Gazetteer has already done much for him and provided he is well looked-after, I have considerable hopes that he may yet turn out well. There appears a difficulty in getting anyone more eligible in his neighbourhood in spite of his defects . . . His next return will enable us to decide what course to pursue.

Archer Papers, NLA, MS 264/15.

[113] *Births, Deaths, and Marriages in the Colony of Victoria During the Year Ending 30th June 1854*, First Annual Report, p.v.

[114] Archer Papers, NLA, MS 105/18, 30 Jan., 1854.

[115] *The Statistical Register of Victoria, From the Foundation of the Colony with an Astronomical Calendar for 1855*, p. 121.

[116] *Statistics of the Colony of Victoria for the Year 1852*, p. 5.

[117] ibid.

[118] Victorian Government Printer, 1854.

[119] ibid., Preface. This was the only volume in the projected series. It could be regarded as a forerunner of the 'Year Book', developed later in the century, but it also bore strong resemblance to the almanac, a form of annual publication very popular at the time.

[120] *Statistics of the Colony of Victoria for the Year 1853*, p. 5.

[121] *Births, Deaths, and Marriages in the Colony of Victoria During the Year Ending 30th June 1854*, First Annual Report, p.v.

[122] *Statistics of the Colony of Victoria for the Year 1854*, p. 5. Report of the Registrar-General.

[123] *Statistics of the Colony of Victoria for the Year 1855*, p. 111.

[124] *Agricultural and Live Stock Statistics for Victoria for the Year Ending 31st March 1858*, Report, p. 8.

[125] *Agricultural and Live Stock Statistics for Victoria for the Year Ending 31st March 1863*, Report, p. vi.

[126] The optimistic 'Religious, Moral and Intellectual Progress' became 'Social Conditions' in 1886.

[127] The Registrar-General's Department was divided into three branches. In 1858–59 the permanent staff of the Statistics Branch consisted of two clerks. Civil Service Commission, *Report of the Commissioners*, 1859, pp. 36–7.

[128] *Agricultural and Live Stock Statistics for Victoria for the Year Ending 31st March 1863*, pp. 112–13.

[129] *Victoria, Parliamentary Debates*, Vol. 7, 1869, pp. 147–8, p. 892.

[130] H. H. Hayter, 'The Colony of Victoria: Its Progress and Present Position', *Journal of the Statistical Society*, Vol. XLII, 1879, p. 404.

[131] *Statistical Register of New South Wales*, 1858, Report, p. 1.

[132] W. H. Archer Papers, University of Melbourne Archives, 2/169/3, Letter dated 30 August 1858.

[133] ibid., 2/169/4, Letter dated 31 January 1859.

[134] *Statistical Register of New South Wales*, 1859, Report, p. 1.

[135] ibid.

[136] ibid.

[137] ibid., 1862, p. 36.

[138] *Statistical Register of Queensland*, 1860, Report, p. v.

[139] *Statistical Register of South Australia*, 1859, Report, p. iii.

[140] ibid.

[141] ibid., 1860, pp. iii and iv.

[142] ibid., p. iii.

[143] ibid.

[144] Archer Papers, University of Melbourne Archives, 2/63/1. Archer to Farr, 17 August 1859.

[145] *Statistical Register of South Australia*, 1861, Report, p. iii.

[146] Australian Statistical Conference held in Melbourne, 1861. Minutes. No report of the meeting has been found. The above is based on what appears to be a shorthand record. The South Australian representative later quoted Archer with approval: 'It would be premature for me to enter on a description of our proposed future publications; but I may mention, that henceforth the Statistic Year Books of New South Wales, South Australia, Queensland, and Victoria will, in the main, accord in their groupings . . .'. (*Statistical Register of South Australia*, 1861, Report, p. iii.) Archer's intention is presumably reflected in the arrangement of contents in the Victorian *Statistics* for 1861.

[147] *Census of Victoria*, 1854, Population Tables, Report, p. v.

[148] ibid., p. iii.

[149] ibid.

[150] ibid., 1857, Population Tables, Report, *passim*.

[151] Archer Papers, University of Melbourne Archives, 2/63/1. Letter to W. Farr dated 17 August 1859. See also *Statistical Register of New South Wales*, 1858, Report, p. 29; *Census of Victoria*, 1857, Population Tables, Report, p. 7.

[152] *Census of the Province of South Australia*, 1861, Report, p. v.

[153] ibid., p. xi.

[154] Archer Papers, NLA, MS 105/5, 3 August 1853. This is Archer's recollection of the governor's words.

[155] Farr Collection, Vol. 1, Item 5, folios 8–9. (Held at British Library of Political and Economic Science.)

[156] Official Statistics Committee, *British Parliamentary Papers* (H.C.), 1881, Vol. XXX. Minutes of Evidence, Evidence of H. H. Hayter, 7 April 1879, paras. 968–9.

[157] W. H. Archer, *The Progress of Victoria: A Statistical Essay*, 1873, p. 3

[158] *Australian Dictionary of Biography*, Vol. 4, pp. 366–7.

[159] His report may be seen in *Agricultural and Live Stock Statistics for Victoria for the Year Ending 31st March, 1859*, Report.

[160] Hayter's words. See *Official Statistics*, p. 22. Presidential Address, Section F, Australasian Association for the Advancement of Science, 1888.

[161] *Victoria, Parliamentary Debates*, Vol. 18, 1874, p. 336.

[162] Official Statistics Committee . . . , Evidence of H. H. Hayter, *passim*.

[163] ibid., paras 955–7.

[164] ibid., Third Report, p. xviii.

[165] ibid.

[166] Hayter listed together the five continental colonies separately from the two island colonies of Tasmania and New Zealand. 'Australasian Statistics for the Year 1873.'

[167] ibid., p. 7.

[168] ibid., p. 8.

[169] Victoria, *Report of the Conference of Government Statists*, 1875.

[170] Official Statistics Committee . . . , Evidence of H. H. Hayter, para. 967.

[171] ibid., para. 924.

[172] *Census of Victoria*, 1881, General Report, p. 10.

[173] Apparently it was used in Bavaria in 1871, *Census of the Commonwealth of Australia*, 1911, Statistician's Report, p. 15.

[174] *Census of Victoria*, 1881, General Report, p. 12.

[175] Official Statistics Committee . . . , Evidence of H. H. Hayter, para. 973.

[176] *Statistics of the Colony of Victoria for the Year 1873*, Report, p. 7.

[177] ibid.

[178] *Victorian Year Book Containing a Digest of the Statistics of the Colony for the Year 1873* by Henry Heylyn Hayter.

[179] ibid., Preface, p. iii.

[180] ibid., pp. iii–iv.

[181] *Victorian Year Book*, 1874, Preface.

[182] ibid., 1875, Preface, p. iii.

[183] ibid., 1877–78, Preface, p. iii.

[184] ibid., 1885–86, Preface, p. iv.

[185] ibid., 1889–90.

[186] William Newmarch reviewed the 1878 edition at a meeting of the Statistical Society in London. His view was summarised thus:

> The handbook is almost a perfect model of what such a publication should be. The contents are most carefully classified according to subjects, and the tabular details are arranged scientifically and skilfully. There is also as much descriptive discussion as is required to bring out the true bearing of the figures. The speaker said it had been his painful duty to examine handbooks, official and otherwise, and to be afflicted by the careless and unskilful manner in which they were framed. But Mr. Hayter's work, on the contrary, was not marked by any of these defects, and Mr. Newmarch would go so far as to say, that the statistical department of the Imperial Government might with advantage follow to a large extent in Mr. Hayter's steps, and profit by his example.

Journal of the Statistical Society, Vol. XLI, 1878, p. 160.

[187] Official Statistics Committee . . . , Evidence of H. H. Hayter, para. 1096.

[188] ibid., para. 1098.

[189] ibid., para. 1102.

[190] ibid., para. 1100.

[191] ibid., para. 1103.

[192] *Victorian Year Book*, 1877–78, para. 563.

[193] ibid., para. 565. The Tasmanian statist commented on a table of Hayter's which showed crude death rates in five Australian capital cities: ' . . . it is natural for ordinary persons to conclude that this is a record or index of the comparative health of these cities; and if it be not so they may well exclaim, for what other purpose are they shown?' Age standardisation, said the Tasmanian statist, changed Hobart's position from the highest to the lowest death rate. *Statistics of the Colony of Tasmania*, 1887, Report, p. xxvi.

[194] Hayter was free with his criticisms, usually justified, of statistics in other colonies. Sometimes there were problems with his own calculations. For instance, in estimating the value of private wealth in Victoria, he took 'the average amount left by each person dying [as] equivalent to the average amount possessed by each person living'. There are obvious problems here apart from Hayter noticing that his most recent figures were probably affected by 'several large estates'. *Victorian Year Book*, 1888–89, para. 911.

[195] *N.S.W. Parliamentary Debates*, Vol. 20, 1885–86, p. 2557. Parkes was a dominating figure in New South Wales politics and five times Premier of that State.

[196] ibid., p. 2558.

[197] ibid., Vol. 21, p. 3374.

[198] From document headed 'Autobiography of my father, the late Sir Timothy Coghlan, I.S.O., K.C.M.G. copied by me from his manuscript. Austin Coghlan', p. 2. (Coghlan Papers, National Library of Australia, MS6335.)

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[199] ibid., p. 3.

[200] ibid.

[201] *N.S.W. Parliamentary Debates*, Vol. 21, 1885–86, p. 3374. Statement by George Dibbs.

[202] *Statistical Register of New South Wales*, 1889, Preface.

[203] 'Autobiography', p. 8.

[204] ibid.

[205] R. M. Johnston was Tasmanian statistician and registrar general from 1882 to 1918. He was a most productive and original worker in both the natural and social sciences. Although he made a number of contributions to the development of official statistics, his wide range of interests and his self-chosen, relative isolation in Tasmania meant that he stood slightly out of the main stream of influence.

[206] The largest group affected by the new classification was wives. For a discussion of the reasons for the classification of women in censuses in Australia and England, see Desley Deacon, 'Political Arithmetic: The Woman', *Signs: Journal of Women in Culture and Society*, Autumn 1985, Vol. II, No. 1. Also, F. L. Jones, 'Is it True What They Said About Women: The Census 1801–1911, and Women in the Economy', *Working Papers in Economic History*, Australian National University, No. 23, May 1984.

[207] *Covering Letter Accompanying Report of Conference of Statists*, 19 March 1890, p. iii.

[208] *N.S.W., Census of 1891*, Statistician's Report, p. 270.

[209] ibid.

[210] ibid., pp. 271–2.

[211] *Covering Letter . . .* , p. iv.

[212] *N.S.W., Census of 1891*, Statistician's Report, p. 270. Coghlan claimed that the new scheme 'was called in European economic circles the Australian System'. 'Autobiography', p. 11.

[213] *N.S.W., Census of 1891*, Statisticians's Report, p. 273.

[214] *Covering Letter . . .* , p. iv.

[215] ibid., p. xvii.

[216] *General Report on the Eleventh Census of New South Wales*, 1894.

[217] *The Wealth and Progress of New South Wales, 1886–87*, Preface.

[218] ibid.

[219] *The Wealth and Progress of New South Wales, 1887–88*, Preface.

[220] ibid. Coghlan says he submitted 'seven or eight names' as possible titles for his year book to the Premier, Sir Henry Parkes, who made the final choice. 'Autobiography', p. 3.

[221] *The Wealth and Progress of New South Wales, 1889–90*, Preface.

[222] *The Wealth and Progress of New South Wales, 1890–91*, p. 676.

[223] *The Wealth and Progress of New South Wales, 1894*, p. 457.

[224] Oxford University Press, 1918.

[225] *Sydney Morning Herald*, 8 December 1891, p. 5.

[226] *Victoria, Parliamentary Debates*, Vol. LXXVIII, 1895–6, p. 2301, Mr. Rogers.

[227] *A Statistical Account of the Seven Colonies of Australasia*, 1890, Preface.

[228] ibid., p. 179.

[229] H. W. Arndt claims that Coghlan 'made New South Wales for a time the country with the best official statistics in the world'. See 'A Pioneer of National Income Estimates', *Economic Journal*, December 1949, p. 616. More generally, N. G. Butlin writes: 'Few, if any, countries in the world can claim to possess official statistics comparable to those of Australia during the years 1861–1939'. See *Australian Domestic Product, Investment and Foreign Borrowing 1861–1938/39*, Cambridge, 1962, p. xv.

PART III

STATISTICS FOR THE NEW NATION

STEPS TOWARDS UNIFORMITY

AT THE BEGINNING of the Commonwealth period, the six States were spending a total of about £18,000 a year on statistical work, of which £2,000 was for the tabulation of vital statistics. The costs associated with decennial censuses were additional as were those of printing, stationery, postage, and telegrams. In a report prepared at the request of the federal government in April 1903, Timothy Coghlan estimated that the States spent between 0.76 pence and 2.82 pence per inhabitant on statistics. The cost comparison alone was of minimal value, as Coghlan pointed out, since the range of statistics covered varied significantly. In some States, 'even statistics relating to the greater primary industries and to Manufactures are neglected or imperfectly collected and presented'.[1]

While colonial statisticians, particularly Coghlan and R. M. Johnston, had played notable parts in the federation debates as financial experts, national responsibility for censuses and official statistical compilation was not a subject of controversy.[2] Federation could be seen as a step towards the elusive goal of statistical uniformity. Some statisticians saw advantages in the prospect of a national statistical authority that might lend its weight to the decisions of the professional conferences which had become the recognised forum for co-ordination. No one disputed that the new nation should have both a responsibility and a capacity to undertake statistical inquiry.

Sir Samuel Griffiths' drafting committee at the National Australasian Convention in March 1891 produced a draft constitution Bill in which Chapter 1 Part V sub-section 12 was to give the Commonwealth the power to make laws in respect of census and statistics. The words 'census and statistics' appear to have come directly from the British North America Act Section 91 sub-section 6.[3] There was no debate on this issue and the Australasian Federal Convention in 1897–98 accepted the sub-clause from the Commonwealth Bill of 1891 again without debate. Under Section 51 (xi) of the Constitution, the Commonwealth Parliament was given a concurrent power to make laws with respect to census and statistics. It was not immediately apparent how this power might be exercised. Later events were to suggest that little thought had been given to how the statistical interests of the States and Commonwealth could best be served in the new era.

The first major statistical business of the twentieth century was the 1901 Census. In March 1900 a conference of statisticians, including a representative from New Zealand, was held in Sydney to arrange for the uniform collection of the 1901 Census. Coghlan, as president of the conference, reported to Lyne, Premier and Treasurer of New South Wales, that the conference broke up into three sub-committees: the first to deal with drawing up a uniform householders' schedule; the second to revise the classifications of occupations; and the third to draw up the reasons which led the conference to recommend 28 April as the day for taking the Census.

It was decided that there would be only one question additional to those asked in 1891. It related to the length of residence for those not born in the particular colony. The reasons for not expanding the Census further were explained by Coghlan:

For notes pertaining to Parts III and IV *see* pp. 86ff.

> There were several suggestions for increasing the number of questions to be asked of the people, but the majority of the members of the Conference were of the opinion that it would be unwise to extend the inquiries beyond the class of subjects usually presented in countries where the census is taken upon schedules. If, as in some countries, the plan were adopted of appointing enumerators whose business it would be to make personal inquiry from house to house, and fill up their books from the particulars thus obtained much more elaborate inquiries might be ventured upon.

The conference decided not to change any of the classifications and to accept those drawn up by Johnston and Coghlan in 1890:

> The experience of ten years has suggested a few changes, but these are all of a minor character, such as may be looked for in the development of the population and industries of a young community.

A number of the colonies had proposed incorporating with the householders schedule a return relating to land and crops. But this proposal was not adopted. Most of the figures were in any case available in the colonies on an annual basis; and it was contended that the census was not the most opportune time for pursuing investigations relating to land and industries. Coghlan put certain resolutions to the conference regarding uniformity which

> . . . if strictly adhered to, will ensure the possibility of exact comparison being drawn between the conditions of the various colonies . . . They consider that uniformity is especially desirable at the present time, when five of the colonies are about to enter upon a federation, as there is every probability that the figures obtained in the coming Census will form the first population statistics of the Commonwealth, and be the basis of many important arrangements in regard to finance and electoral representation.[4]

The actual date of the census also had to be settled. The night of the first Sunday in April had been the usual time of census taking, but in 1901 the first Sunday in April was Easter Sunday.

> The effect of taking a Census at a time of general migration like Easter would be to enumerate the population in places in which they do not usually reside, and to increase unduly the population of some localities at the expense of others. The result would be utterly misleading so far as localising the population, and would also affect the number of males resident in given areas.[5]

The choice of April 28, though a departure from the imperial census, would give people time to settle down after holidays and after harvesting.

From the outset it was clear that generally accepted population figures would be essential as a basis for apportioning payments to or for the States. In September 1901 the Prime Minister wrote to all State Premiers asking if they were willing to use figures supplied by the Victorian Government Statistician for the purpose of calculating the future distribution of 'other' new expenditure. Alone of the respondents, New South Wales proposed a different approach. They would prefer to include half-castes in the figure for their State, bringing the total to 1,356,090.[6]

Another conference of statisticians was held in Hobart in January 1902; it was called specifically to look at uniformity in preparation of statistical returns. All the States except Western Australia were present and a representative from New Zealand also attended. This conference had been proposed by Coghlan in a letter to Johnston on 25 June 1901:

> I have long considered it would be extremely desirable that the statistics of the States should be placed upon a uniform basis . . . Such uniformity is all the more desirable, since the Statistics of Australia (now that the States have accomplished Federation) will be quoted as for the Commonwealth, and not for the individual States . . . A year or two ago I arrived at an understanding with Mr Fenton of Victoria as to the compilation of statistics relating

> to Manufactories and Works, and I see no insuperable difficulties in placing the statistics relating to Education, Law and Crime, Public Finance, Land Settlement, Agriculture, Vital Statistics, and so forth, upon a uniform basis throughout the six Colonies.[7]

In his letter inviting the various State Premiers to send a statistician to the proposed conference, N. E. Lewis, Premier of Tasmania, said that besides the question of uniformity there was a need for a conference:

> To advise upon all matters where dual functions of Commonwealth and States respectively may be carried out by the same machinery in the various branches of State Bureaux. For example the whole question of the dual relationship, organization etc., between State and Commonwealth must be carefully gone into so that no confusion may arise, as would be the case if a double set of machinery were employed in collecting statistical and other matters in the same region.[8]

The report of the conference dealt with the need for a 'harmonious relationship' to be established between the various State bureaus and the soon to be formed Commonwealth Bureau:

> Having devoted some considerable thought to this important matter of the harmonious relationship . . . it is the general opinion among the members of the Conference that the whole work of collection of the materials of statistics, whether for State or Commonwealth, had better be deputed to the officers of the several State Bureaux of Statistics. This would avoid confusion and extra expense such as would surely arise if double machinery were employed upon the same statistics within the same region; that is the local State officers would be charged with dual functions. As officers of the State, they would be under the direction and discharge the functions which they now carry out for the State. In addition they, co-operating with the Central Bureau of the Commonwealth, could prepare all statistics required in a more concentrated form for the publications of the Commonwealth, of course, under a definite agreement between the respective Governments of State and Commonwealth.[9]

Prior to Federation, the statistics of commerce and shipping were a major part of the work done in each colonial statistical office. Federation had taken from the States their largest source of revenue—the right to levy customs and excise duties. But, after protracted negotiation on principles and procedures, it had been agreed that, for ten years after the determination of a uniform tariff, at least three quarters of the revenue collected by the Commonwealth would be returned to the States. A 'book-keeping system' was devised which kept an account of the destination of all dutiable goods entering the country and each State was to be credited with the revenue deemed to have accrued from goods destined for consumption within its boundaries. Principles of classification were agreed at the Hobart meeting to facilitate the compilation of statistics on a comparable basis. But the classification scheme was not in fact followed by the State bureaus.[10] Although the Commonwealth was to turn to Coghlan for advice, the categorisation of items in trade and customs statistics was to be a recurring problem for which the Commonwealth authorities had no great enthusiasm.

The other important financial loss for the States resulted from the transfer of postal administration to the Commonwealth. Except in South Australia, all statistical returns were carried free of postage charges. The conference strongly recommended:

> the retention of the free franking system for the transmission of public business communication in connection with the State Statistical and Registry Department.

There were a number of other recommendations:

> (1) That the conference recognises the necessity for recording all persons engaged in industrial pursuits or attending school in Census enumeration, including aborigines.
> (2) That, as the 5,137 aborigines included in the Queensland Census are engaged in industrial pursuits, or attending schools subsidised by the Government, they should be included in the general population for all purposes except those relating to the Commonwealth.

> (3) That, owing to the difficulty of estimating the numbers of the people at long intervals, it is desirable to take an intermediate Census—five years after each general Census—showing at least the Names, Sexes and Ages of the people, and distinguishing Chinese and other Coloured Races, so that it may be possible to separate them from the general population, if thought desirable.
> (4) That, in the opinion of this Conference, it is desirable that legislative authority be provided in any State of the Commonwealth not yet possessing permanent Census and Statistics Acts, so as to enable needful information to be efficiently collected.[11]

The treatment of Aboriginal people was to be a recurring issue and the concept of a quinquennial census was to be urged without success for another half century.

Concerned at the absence of uniformity in estimating the population of the States, Coghlan persuaded the New South Wales Premier, Sir John See, to suggest another conference in 1903. Coghlan and the other five State statisticians agreed on a uniform basis for estimating population, with Coghlan apparently the chief architect of the reforms. The Census of 1901 was taken as the starting point. Various percentages were to be added to the individual States, allowing for unrecorded departures by land, sea or rail. Population figures were henceforth to be published quarterly on a uniform basis and the mean of the four quarters was to be taken as the mean population for the year. The population statistics had a special significance in the context of federal–state financial relationships. Up to 30 June 1910 all 'new' Commonwealth expenditure was debited to the States according to their population. Thereafter payments to the States were also based on population. Moreover, the number of members of the House of Representatives was dependent on population calculated so as to exclude Aboriginals and aliens disqualified from voting by State electoral laws. In determining the population of the various States as at 30 June 1902 full blooded Aboriginals were excluded but the numbers were to be shown on a separate line in the various estimates.

CREATING A NATIONAL ORGANISATION

While the Constitution gave the Commonwealth a concurrent power over census and statistics, the qualified enthusiasm of the States made it by no means certain what this would mean in practice. Federal Cabinet decided in March 1903 that the Minister for Home Affairs, Sir William Lyne, should ask Coghlan to advise on the 'probable extent and cost' of establishing a federal bureau of statistics. Coghlan incorporated in his report the views of his colleagues J. J. Fenton (Victoria), J. Hughes (Queensland), L. H. Sholl (South Australia), M. A. C. Fraser (Western Australia) and R. M. Johnston (Tasmania). All had been asked:

> Do you consider it will be necessary or desirable to maintain a State statistical office after the establishment of a Federal Bureau, supposing the latter to be on an entirely efficient basis?

So blatantly contrived a question unsurprisingly elicited a unanimous declaration in the affirmative. Coghlan's conclusion was that however matters were arranged there would remain with the States important work connected with vital statistics, land, labour and licensing laws, public and private charities, 'and other subjects connected with the social and industrial well-being of the community, and in regard to which State Parliaments have the right of legislation'.[12] The Commonwealth intention to set up a body that would in some respects at least supersede or pre-empt the States received little encouragement from Coghlan's peers. In a report written on 4 April 1903, R. M. Johnston made plain his belief that a federal bureau 'could not possibly be established on an entirely efficient basis without the aid of auxiliary subordinate local Statistical Bureaus in each independent State'. Nevertheless the plan urged by both the Federal Government and the Governments of New South Wales and Victoria at the 1905 Premiers' Conference in Hobart was to create a federal department and abolish the State offices.[13]

In the meantime Coghlan had been engaged to shape the statistical branch of the Customs Department with the intention of developing a model organisation that would be adopted for other federal departments. It seems to have been envisaged that these departmental offices would be linked under a central bureau. Coghlan also supervised the preparation of the Commonwealth Trade and Commerce Returns for 1903 and 1904.

In March 1904 Coghlan was offered the position of federal statistician. He declined the post. According to his own autobiographical account, 'on pointing out the difficulties surrounding the establishment of a Statistical Office to Sir William Lyne, a provisional arrangement was made, under which he agreed to prepare yearly an edition of the "Seven Colonies" '.[14] The offer was renewed by George Reid later in the year. But Coghlan had decided to go to London in response to the urging of the New South Wales Premier, J. H. Carruthers, who was anxious to re-organise the work of the Agent General's Office. Coghlan had shown no enthusiasm for an earlier proposal by Carruthers that he fill the specially created post of Financial Adviser to the New South Wales Treasury. Believing that the London appointment was only temporary, Reid agreed to defer the establishment of the new bureau until Coghlan's return.

In fact, Coghlan was already turning to fresh fields. He told friends that he was concerned about his pension rights if he 'threw over my own Government'. But he also aspired to be Australia's first High Commissioner, seeing in that post the chance to 'make Australia hum'.[15] It was not until the Commonwealth census and statistics legislation was enacted that Coghlan finally advised Deakin not to consider him further for the post of Commonwealth Statistician. Carruthers was unwilling to release him pending the completion of 'financial transactions' on behalf of New South Wales and had suggested that he accept the position on condition that he be allowed to take it up after the appointment of a High Commissioner had been made.[16]

Coghlan deliberately did not discuss his London ambition with Deakin, having already disclosed it to Sir John Forrest only to discover that Forrest also coveted the post. But Coghlan's temporising and ambivalence were ultimately self-defeating. He was never a serious contender for a job that was to be ornamented by a succession of ex-Prime Ministers. And his self-serving lament about the absence of qualified rivals for the Statistician's post did not deter the government from proceeding to make an appointment from the available candidates. Littleton Groom, the Minister for Home Affairs, had been willing to pay Coghlan £1,200 a year, but the position was eventually advertised at an annual salary of £800 to £1,000.[17]

In February 1905 a conference of Commonwealth and State Ministers was held in Hobart and Sir George Turner, the federal Treasurer, pointed out that the States were spending about £20,000 a year on statistics, and £120,000 every ten years on the census. Prime Minister Reid, in referring to various powers, including that of legislating on census and statistics, said:

> We want to explain that the Commonwealth proposes to take over these departments. But, in as much as they are State departments and departments transacting business with the public, we want to take them over with due consideration, in order to avoid dislocation, and with as little inconvenience as possible to the public . . . We will therefore invite the State Governments to co-operate and help us exercise these powers in the most convenient way.

J. G. Jenkin, the Premier of South Australia, stated that:

> Under the heading of census and statistics we know that means the employment of a good many State officials to get the information. I hope it is not the intention to establish a complete new department of Federal officers to carry out the work. If it means that it will be an expensive luxury.

Allan McLean, the Minister for Trade and Customs, replied:

> It is not intended to do that in connection with any service taken over. We desire to take over such services as are included in our constitutional powers, and which can be better managed by one central department.[18]

The Census and Statistics Bill was introduced into the House of Representatives by the Minister of Home Affairs, Littleton Groom, on 23 August 1905. His second reading speech noted that the Commonwealth power in relation to census and statistics was a concurrent power. He went on to say:

> The object of the Bill is to enable the Commonwealth to establish a central bureau of statistics in order that it may furnish to the world statistical returns with respect to the matters under its special jurisdiction, and also publish certain statistics having reference to the affairs of Australia as a whole.

Even though a central office with a Commonwealth Statistician was to be established the States were still to retain their own offices and officers.

> We start on the assumption that the States will require to have their own local statistics for their own purposes . . . I think it would be advantageous for them to have one Commonwealth department; but judging from the tone of replies received from them I am inclined to think that some negotiations will be required before they will be prepared to hand over their own departments.

Groom explained that there were two possible courses:

> We might have a central statistical bureau with branches in each of the six States; which could be used for State purposes as required. As an alternative we could establish a central Commonwealth bureau and enter into negotiations with the various States with a view to utilising their departments to the fullest possible extent. During the early stages of the organisation of the Commonwealth departments the latter will be found to be the most practical course to pursue.

The reason for a centralised Bureau was given as a need to:

> bring into line the statistics of the States for the purpose of comparison, to lay down a uniform method for the collection of statistics.

In addition:

> The central department will collect all information in regard to subjects specially controlled by the Commonwealth, such as imports and exports, trade, and commerce generally including inter-State transactions, navigation and shipping, postal, defence and other matters.[19]

It would remain a power of the States to collect their own census data. But the proposed Commonwealth census would be decennial and would rely on a parliamentary appropriation.

When the debate resumed on 3 October 1905 the Bill was closely scrutinised. In the Senate the clause dealing with free postage, which had attracted much attention at the 1903 Conference of Statisticians in Hobart, was deleted. It was also argued unsuccessfully that the census schedule should be approved by Parliament before it could be distributed. The Census and Statistics Act was assented to on 8 December 1905. Part II of the Act dealt with the appointment and powers of the Statistician, arrangements with the States for collection of data, and secrecy provisions. Part III related to the taking of the census. The first census under the new Act was to be taken in 1911. Part IV of the Act covered statistics and laid down the areas where the Statistician was to have authority:

> 16. The Statistician shall subject to the regulations and the directions of the Minister, collect, annually, statistics in relation to all or any of the following matters:
> (a) Population;
> (b) Vital, social, and industrial matters;
> (c) Employment and non-employment;
> (d) Imports and exports;
> (e) Interstate trade;
> (f) Postal and telegraphic matters;
> (g) Factories, mines and productive industries generally;
> (h) Agricultural, horticultural, viticultural, dairying, and pastoral industries;
> (i) Banking, insurance, and finance;
> (j) Railways, tramways, shipping, and transport;
> (k) Land tenure and occupancy;
> (l) Any other prescribed matters.

The Statistician was given wide powers. He was able at any time during working hours to enter any factory, mine, workshop, or place where persons were employed to make inquiries or inspect all plant and machinery. The penalty for hindering an officer under this section of the Act was ten pounds. Penalties for supplying false information or failure to supply information were also prescribed. A severe penalty of fifty pounds applied to any officer of the Bureau who divulged the contents of any forms or any information furnished to the Bureau.[20]

At a conference of State and Commonwealth Ministers in Sydney in April 1906 it was resolved 'that the general statistical departments should be handed over to the Commonwealth'. Meanwhile, the position of Commonwealth Statistician had been advertised in the *Commonwealth of Australia Gazette* on 24 February 1906. 'I wish I could see someone fitted for the post in the service of the Commonwealth or of the States', Coghlan intimated to Deakin. 'The only man of ready talent fit for the work is a young man named H. A. Smith in my office in Sydney.'[21]

Smith was chief compiler in the vital statistics branch of the New South Wales Statistician's Office but manifestly too junior, notwithstanding Coghlan's lukewarm patronage, for the federal appointment. In 1919 he became New South Wales Statistician. R. M. Johnston, at 62, declined to be a candidate for a position that would take him away from Tasmania. But George Handley Knibbs was deemed suitable. His appointment, at a salary of £1,000 a year was announced in the *Gazette* on 26 May 1906. Knibbs, born in Sydney in 1858, and formerly a surveyor and lecturer in the engineering school at Sydney University, had been president of the Institution of Surveyors 1892–93 and 1900–01, honorary secretary of the Royal Society of New South Wales for nine years and president in 1898–99. He was co-author of a report on education prepared for the New South Wales Government after an overseas study done in 1902–03 and was appointed Director of Technical Education in New South Wales early in 1906, following a brief period as Acting Professor of Physics at Sydney. Although he had been in 1887 a foundation member (with Coghlan and Hayter) of the Australian Economic Association, whose second but unfulfilled object had been the compilation of a statistical history of the various Australian colonies, Knibbs had hitherto had little direct involvement in the kind of official statistical work for which he was to be responsible.[22]

Sir William Lyne, whom Groom consulted about Knibbs, reported that 'he used to be a very bitter opponent and writer to the press, always against our party'. But Knibbs had 'been for some time past rather reasonable' Lyne admitted. 'I know nothing against him,' the Minister for Trade and Customs concluded, 'and probably he would make a very good man . . .'[23]

In an early private assessment of the Commonwealth Statistician Coghlan had commented:

> Knibbs will have a very uphill job. As at present situated he can do his work only thru' the State Offices, and he will speedily find himself in difficulties for lack of information. He has great abilities and attainments, but his lack of acquaintance with the technique and presentation of statistics are great obstacles to success, but of all the applicants he was certainly the best.[24]

Writing to Alfred Deakin, Coghlan conceded that the 'appointment of Mr Knibbs should carry with it a good share of support in the States'. But the praise that followed was obtrusively faint. 'Mr Knibbs has high mathematical attainments, he is earnest, hardworking and scrupulously honest but he must be given experienced assistants, a knowledge of the technique of statistics is absolutely essential to even moderately good work.'[25] A few months later another friend was invited to tell Coghlan 'how Knibbs is shaping—badly, I should say, every man whom I discarded as worthless seems to have got into Knibbs' good graces'.[26]

Those who had most conspicuously got into Knibbs' good graces were the five principal professional officers appointed, as Knibbs' first *Year Book* put it, 'to the command of the various greater divisions of statistic [sic] in this Bureau'. They were John Stonham, 'M.A., Sydney University (Chief Compiler)', Henry Spondly 'Zurich University', Charles Henry Wickens 'Associate of the Institute of Actuaries', Frederick Dalglish Rossiter 'M.A. Melbourne University', and Edward Tannoch McPhee 'Tasmanian Statistical Bureau'.

Spondly's province was vital statistics. Rossiter was recruited from the Victorian Bureau and was responsible for defence and the library. Wickens, who had recently composed Western Australia's first life tables after conducting the 1901 Census there, came to be supervisor of census. Stonham had been with the New South Wales Bureau and was given responsibility for 'general administration'. Though remaining nominally the senior officer, Stonham was passed over for both Wickens and McPhee (who had been in charge of trade, customs, and commerce) as well as by L. F. Giblin when the post of Commonwealth Statistician was vacant in later years. In May 1933, in the course of an unsuccessful appeal against a recommendation by McPhee that Roland Wilson should normally act as Statistician in McPhee's absence, Stonham claimed

> . . . I was mainly instrumental in laying down the main lines of procedure at the inception of the Bureau. I was secretary to the first Conference of Commonwealth and State Statisticians . . . Mr Knibbs (as he then was) freely admitted that it was largely due to my official work that the Bureau proceeded on successful lines . . . In addition to being the *original* author of three chapters of the Official Year Book, I contributed portions to others, and some of my original writing in them remains to this day . . .[27]

The conference at which Stonham served as secretary was held from 30 November to 8 December 1906. In the preceding months Knibbs had travelled to each of the State capitals to examine their methods and 'legal and administrative powers' as well as to seek out potential recruits. He also made an 'exhaustive but rapid examination of the whole range of Australian Statistic [sic]'. Knibbs' plan for the subjects to be covered by the new Bureau were foreshadowed by Senator J. H. Keating, Minister without Portfolio, on 11 October 1906 during discussion of the Appropriation Bill. Keating noted that the transfer to 'the Statistical Department' of the statistical officers of the Customs Department was under consideration.[28]

Knibbs went to the 1906 conference armed with 'a comprehensive memorandum' and 'a complete series of forms, indicating what might be attempted through an adequate organization of the State Statistical Bureaus, and illustrative of the range of requirements of the Commonwealth Statistician'.[29] His lengthy opening speech was a blend of credo and tactical compromise. The Commonwealth and the States were not 'different and mutually exclusive entities, as in the case, let us suppose, of different nations, but a single entity—the people of Australia'. There had been ministerial agreement earlier in the year, Knibbs pointed out, 'to the effect that general statistics should be relegated to federal control'. This was not a very enlightening formula. In reply to a request by the Prime Minister for elucidation, the States had offered a variety of self-serving interpretations which negated the agreement. The South Australian Premier had the singular honesty to confess on 19 July 1906: 'I have the honour to state that I am not aware of the meaning which these words were intended to convey'. Undaunted, Knibbs declared that the 'scope of the statistical requirements of the Commonwealth . . . cannot be less exhaustive than those of the States'. The Commonwealth was 'materially interested' in all of the available statistical data for each State. Without a 'complete statistical record' it would be 'practically impossible for the Commonwealth Government to be adequately and accurately advised in connexion with its administrative and legislative functions'.[30]

No one was disposed to challenge these propositions. Nor was there significant disagreement with the details of the 145 'common statistical forms' which Knibbs submitted for adoption. The conference unanimously adopted a series of resolutions that stated and elaborated on the desirability of uniformity in method, order, and date of 'co-extensive' statistical collection, compilation, and publication of statistical information by the State bureaus. Co-operation and consultation was pledged. Exchange of information, initially within the scope of the approved forms and thereafter by agreement, was to be free of charge 'and with the greatest punctuality of which the circumstances admit'.[31]

Some old problems were tackled and new ones identified. It was agreed that the services of the police rather than ordinary enumerators or direct enquiry should be used for the collection of information 'as far as practicable'.[32] A quinquennial enumeration restricted to sex and age was seen as essential for ensuring accuracy in determining the fluctuation of population in the States.[33] (The Victorian Statist, having discovered what he believed to be a flaw that greatly exaggerated the loss of his State's population by sea, dissented from the recommendation that the method of estimating inter-censal population changes should not be altered until the next census.)[34]

In his speech, Knibbs had argued that a 'principle of localization' was needed in order to rationalise the 'determination of statistical aggregates within localities fixed by definite boundaries'. His declared preference for using police patrol areas, at least as an interim procedure, did not win assent. But it was resolved that steps ought to be taken 'for the determination of definite statistical units of area, due consideration being given therein to local enactments, and existing State divisions'.[35] (In 1919 Knibbs was to publish a monograph on local government as a prelude to the proposed use of 'the municipal subdivision of the States as a basis for the presentation of data in connexion with the next census'.)[36]

One of the benefits of localisation of statistical aggregates would be the availability of data linking specific forms of primary industry to 'means of communication'. Knibbs emphasised that such information was vital to determination of 'a true solution' for the management principles to be adopted for government railways. Should railways be run as commercial concerns intended to yield a profit or 'as means of developing a territory' without regard to 'immediate or direct profit'? Whatever the 'true solution' to this or other questions, improvements were also necessary, Knibbs noted, in factory, forestry, water and irrigation, fisheries, banking, private finance, and insurance statistics. Estimates of the value of agricultural produce needed to be put on a more consistent basis so that 'questions of economic loss arising from lack of co-operative effort or from difficulty in placing on a suitable market would be possible of fuller and more satisfactory discussion'.[37]

Knibbs could be well pleased with the cordiality and consensus achieved at this meeting. Translating it into concerted action was to prove another matter. During 1903, 1904, and 1905 New South Wales, Queensland and Tasmania had adopted a system of classifying causes of death introduced by the British Registrar-General in 1901. In spite of agreement at the 1902 Statisticians' Conference, Victoria, South Australia and Western Australia had persisted with the Farr–Ogle system. At the Melbourne conference Knibbs successfully recommended the use of the International Institute of Statistics' Bertillon Index. But it was not until 1917 that he was able to report that all of the States were employing the Bertillon System in their monthly and quarterly bulletins of vital statistics.[38]

Among Knibbs' earliest tribulations was confusion over the activities of Coghlan. In July 1906 Knibbs had concurred with a proposal that Coghlan should publish a volume of statistics on Australia and New Zealand for 1904–05. Coghlan had offered to undertake the task, contending that it was very much a personal work; and the Premier of New South Wales had sought the agreement of the Commonwealth Government to this once-only sequel to the now discontinued New South Wales publication, *A Statistical Account of Australia and New Zealand.* A grant of £500 was made to Coghlan in return for the supply of copies of the work but nearly a year later Coghlan advised that he was abandoning the project.[39]

In the meantime the Bureau staff had been examining existing statistics prior to establishing their own procedures. 'So many discrepancies were found', Knibbs advised the Secretary of the Department of Home Affairs, 'that it became necessary to compile authoritative statistics for whole Commonwealth period, 1901 to 1907'.[40] In a draft response to a parliamentary question on whether the government intended to authorise the annual issue of a statistical publication 'on similar lines to that compiled by T. A. Coghlan, and entitled "A Statistical Account of Australia and New Zealand" ' Knibbs wrote that he had been authorised to publish 'an Official Year Book for the Commonwealth'. However, the volume 'will not be based upon "Australia and New Zealand" as a model, but its form has been decided upon after a comparative study of the annual statistical publications of the civilised world'.[41]

Eight thousand copies of this innovative book were to be printed, half of which were to be taken by the Department of External Affairs. Knibbs had recommended a 'liberal supply' to British, American and other foreign libraries, as well as to schools, public libraries, steamers, trains, schools of arts, mechanics institutes, agricultural societies, mining institutes, farmers' associations and 'debating societies with proper libraries'. In order to 'meet the difficulty of excessive demand for gratuitous copies', 1,000 copies were also to be placed on sale at 3/6d plus postage. [42]

Arrangements for the printing of the *Year Book* were themselves the source of prolonged controversy. Knibbs had to overcome Treasury opposition and gain ministerial approval in order to call for tenders rather than rely on the slow and allegedly inferior work of the Victorian Government Printer. He insisted that the entire body of type should be set by hand rather than by linotype or monotype machines. Although one prospective tenderer had indicated that hand setting would double the cost, Parliament was assured on 9 October 1907 in answer to a question on notice to the Prime Minister:

> the work is of a special nature, involving a large amount of tabulation, and is subject to continual alteration, as fresh data comes to hand, and in the opinion of experienced statistical officers and printers, it cannot with advantage and economy be dealt with by machine setting.

Only a handful of large firms—John Sands, Sands & McDougall, and McCarron, Bird—could readily meet the requirements of the tender, especially restrictions on sub-letting portions of the contract. McCarron, Bird of Melbourne were the successful tenderers.

It was possible to expedite printing—'a private firm has to please, or the custom is lost' Knibbs noted in a memorandum of 21 February 1907, to the Acting Secretary of the Home Affairs Department. But there was little that could be done to overcome the dilatoriness of the States in submitting information. 'Under existing arrangements this Bureau has to wait until the States of the Commonwealth have compiled the information before we can even start to compile, and owing to the unequal efficiency in the staffs of the several State Offices some of them are much later than others. Further the compilation of individual subjects is not contemporaneously carried out in several States.' [43]

Nearly a year later Knibbs advised his Minister that the Commonwealth Bureau 'is at the mercy of the slowest and least efficient State Bureau for the completion of practically the whole of its statistics'. This crippling dependence was obviously irksome. 'Unless more strenuous efforts are made by the States to supply the Commonwealth with statistical information it will become necessary for the central authority to obtain statistical information directly instead of through the State Statisticians.' [44]

The long awaited first edition of the *Year Book* was widely welcomed. Six months after publication Knibbs forwarded ten pages of extracts from press and personal comments to his Minister, Hugh Mahon. From the range and tone of newspaper reviews it was clear that the volume had achieved its objective of promoting overseas appreciation of Australia. Walter Murdoch, lecturer in English Literature at Melbourne University, commended the work as 'a miracle of clearness'. The German Acting Consul-General in Sydney and the Commander-in-Chief of the United States Atlantic Fleet found the book 'of great service' and 'invaluable' respectively.

As for the Minister, he minuted that it was 'a triumph of industry, discrimination and judicious arrangement'. Diffidently, he suggested that 'a more copious index to the multitude of facts' might be desirable. [45]

The only sour note to find its way into the files was an anonymous review in the *Bulletin* on 7 May 1908 which, the Minister was assured, 'Misrepresents the facts and figures in a very remarkable way'. But the *Bulletin's* most wounding shaft was aimed not at the Statistician's 'columns of figures and his mathematics' but at his efforts as a 'descriptive writer'. [46] The unstated contrast with Coghlan leaped from between the lines. Coghlan's own judgment was unflattering:

> Knibbs, I take it, must have the ear of the press, as I do not hear of any complaints. His yearbook is full of errors, being so inexperienced, I wonder that he did not lay himself out to make a success of one thing at a time. [47]

'To be a successful Statistician, one needs to be an economist', he explained to Deakin, 'statistics and mathematics are often directly opposed'. To another old friend Coghlan wrote 'I feel vexed with Knibbs who deprecates everybody's work and does very little himself'. Candidly he confided that he was not enamoured of his post as Agent-General. 'I would rather be Statistician any day.' [48]

Coghlan's regret at taking a wrong turning in his own life blinded him to the substance of Knibbs' achievement. The *Year Book* was an outstanding production. In 29 chapters spread over 931 pages, the Commonwealth had a remarkable compendium of data, historical summaries, and occasional commentary. While there was considerable thematic continuity between Coghlan's *Statistical Account* and the *Year Book*, Knibbs' volume had a more austere tone. There were no chapters corresponding with Coghlan's 'Food Supply and Cost of Living', 'Social Condition', and 'Religion'. Where

Coghlan had written of 'Industrial Progress', Knibbs dealt with 'Industrial Unionism and Industrial Legislation'. Nevertheless, the new reference book provided glimpses of the Statistician's personal judgment. In discussing 'Causes of Decrease in Crime' Knibbs noted that 'collaterally with the introducation of ordinary intellectual education certain people have departed from their pristine virtues'. He remarked on the 'mistaken zeal' of police in informing employers about the prison records of prospective employees, and condemned the 'danger and absurdity of sending drunkards to gaol'. On the contentious question of 'Trade of the United Kingdom with Australia. Has it been Diverted?' he relied heavily on quotations from a report of the Advisory Committee on Commercial Intelligence of the United Kingdom Board of Trade. [49] The following year, however, there was a much expanded chapter on commerce, including articles on the customs tariff of 1908, and the development of trade with the East. In succeeding years specially contributed essays became a feature of the *Year Book* covering such topics as the kindergarten movement (1909), Aborigines (1910), the Commonwealth seat of government (1911), preferential voting (1912), and anthropometrical measurements of military cadets (1918).

GEORGE KNIBBS: INITIATIVE AND ACHIEVEMENT

Knibbs' philosophy and vision were further expounded in a series of publications, in addition to the annual *Year Books*. 'Uniformity in Statistic [sic] an Imperative Necessity', Knibbs' first *Year Book* had proclaimed in a bold heading.[50] Statistical uniformity, Knibbs said, was an urgent requirement of Commonwealth administration. But, while the Commonwealth 'is directly concerned with the good of the whole as well as that of the individual States' the thrust of his argument remained the same as that of his address to the State statisticians in November 1906, that the well-being of the Commonwealth implies the 'well-being of its integral parts, viz. the several States therein'.

In a lecture on 'The Problems of Statistics' delivered to the Australasian Association for the Advancement of Science in 1910, Knibbs disclosed his conception of the purpose and agenda of modern official statistics:

> Official statistics . . . arise from a clearer perception of what is essential for productive administration, and for what has been called, in the wider sense of the term, police regulation.

The *raison d'etre* of official statistical organisations was the need for 'an adequate statistic[sic]' that would make it impossible 'to distinguish between results which may be properly credited to wise or bad government and what may more properly be credited to the lavishness or niggardliness of Nature'.

Knibbs saw it as a fundamental task of economics to investigate 'the economic efficiency of the human unit'. As he conceived it, this entailed calculating the energy spent in nurture, education, and 'general maintenance' and setting it against 'productive activity'. It would be desirable, he contended, to know the extent to which the activity of productive units was affected by disease, and variations in efficiency according to age and natural and acquired endowments. The cost of general and preventative medicine, and of education and occupational training, would also need to be considered in 'any equitable adjustment of the social system'. A 'complete analysis of the total economic effect' of public hygiene measures remained to be made. And, without explicitly endorsing the arguments of eugenicists, he noted that 'eugenic considerations' were increasingly influencing public opinion, and commended the 'systematic examination of school children from an anthropometric and hygienic point of view'.

Returning to one of the subjects he had put before his fellow official statisticians in 1906, he articulated his argument that 'too strict an adoption of the commercial principle may be detrimental to the general interest of the community' when applied to the nation's railway system. Knibbs left no doubt that he had a vision of the role of statistician guided by a 'high aim' of understanding 'the inter-relations and inter-dependencies of man with his fellow-man, and, from his position of professional expert in statecraft, assisting the administrative statesman with his counsel and advice'.[51]

High minded utterances combined with what W. M. Hughes, the Attorney-General, characterised as 'wholesale condemnation of his predecessors' exposed Knibbs to criticism for 'the extraordinary amount of corrigenda in his own work'. Hughes told Knibbs' Minister, Hugh Mahon, in April 1909, that the Commonwealth Statistician is 'purely a theorist'. 'If you were to make enquiries into the work of his office you would find', Hughes forecast, 'that what he does himself is very little indeed'.[52]

The source of many of the adverse assessments of Knibbs was the acerbic pen of Coghlan. Thus when Knibbs travelled overseas to study census methods he was derided for taking 'a jaunt'. And, in a letter to a friend at the *Bulletin*, Coghlan confided that 'I think his work is of poor quality, and he suffers terribly from swelled-head'.[53]

Critical perceptions of Knibbs' activities were associated with State resistance to Commonwealth ambitions. When the Western Australian Government introduced a statistics Bill in July 1907, Knibbs pressed for federal intervention to prevent it, but the Attorney-General, Groom, advised that a State Parliament had the right 'to legislate to obtain certain statistics for itself independently'. It was a question of policy whether representations should be made 'in respect to the unnecessary duplication of machinery'.[54] Persistent efforts by Knibbs from 1907 onwards to persuade his Ministers that 'federalising of statistical services' was essential were to no avail. While the principal State statistical officers of Queensland and South Australia had been appointed as Commonwealth officers as envisaged in the 1905 Act, they operated under an uneasy formula — which encountered prolonged resistance from other States — that entailed their acceptance of 'professional directions' from the Commonwealth Statistician without being under his 'immediate administrative authority'. 'The present system of dual control is conducive to delay, incompleteness and want of uniformity in presentation', Knibbs complained to his departmental head on 26 November 1909 after vexing correspondence with Queensland and frustrating delays in obtaining returns from the under-staffed Tasmanian statistician. Nevertheless, because of the need for co-operation on the Census, he suggested the following April that 'the matter of assuming the whole range of statistical functions' should be deferred until after the main part of the Census work had been completed.[55]

The 1911 Census was the first major opportunity for Knibbs' counsel (and the talents of Wickens as a vital statistician) to be implemented. Knibbs adopted the innovative New South Wales and Victorian question of 1901 about the number of children born to the marriage and extended it to previous marriages. (Ex-nuptial births were not recorded and data on women who were separated, divorced, or widowed were collected but not tabulated.) He introduced questions about race, the occupation of a person's employer, and the length of time unemployed persons had been out of work; and made it possible to distinguish between house-owners and tenants. The weekly rent of tenants was asked but the Senate refused to sanction questions about alcohol consumption, wage rates, and the amount of currency in circulation. Information was to be supplied on cards by each individual rather than on a household schedule. The British were planning to transfer data from householders' schedules to Hollerith punched cards for storage and processing. Knibbs decided, however, that electric adding machines and calculators, but not tabulating or sorting machines, were to be used for computation. In a widely circulated pamphlet, Knibbs explained the historical background, purposes, and operations of the Census. As a 'national stocktaking' for 'sociological, economic and hygienic purposes' the data would enable the government to deal more effectively with 'the most urgent problem of the day', the declining birth-rate. In explaining some of the administrative, financial, and social policy objectives of Census taking, Knibbs made an effective case for the prospective temporary employment of 350 enumerators, 6,000 collectors, and 150 clerks.[56]

Among the 1911 findings, published in seventeen bulletins and a three volume report, were some with significant policy implications, notably the estimates of the male population aged between 18 and 60 who were eligible to serve in the Citizen Forces in time of war (57 per cent), and the revelation that 4.5 per cent of the population was eligible for old age pensions. Because of mis-statements by respondents, calculations of age based on previous censuses were believed to be very inaccurate. Knibbs and Wickens introduced a process of 'age smoothing', but the problem persisted, posing a puzzle for successive Statisticians. As the 1933 Census Report put it, 'unassailable generalisation' about the reasons for mis-stating age was not possible. Ingnorance and carelessness were factors, as were

> a more or less conscious preference for certain attractive digits, such as 0,5, and even numbers, and possibly unconscious aversion to certain odd numbers such as 7; and some wilful misrepresentations arising from motives of an economic, social or purely individual character.

By 1961, the problem had largely evaporated, probably as a result of improved educational standards and 'a more constant necessity' to disclose or prove age in a variety of contexts, as well as the compulsory registration of births, deaths, and marriages.

Confronted by the fact that their 1911 figures showed that 80 per cent of all reported cases of deaf mutism were aged 10 to 14, rather than in the earliest age groups as would be expected for a congenital condition, Knibbs and Wickens sought the explanation in understatement by parents hoping that their children would recover or anxious about losing them to educational institutions. The group aged 10 to 14 would be thoroughly enumerated because they were likely to be receiving specialised education and their teachers would provide the census information. Ten years later the discovery that the age group 20 to 24 had the most deaf mutes made it clear that an epidemic of some sort must have affected this particular cohort. Later medical research, drawing heavily on the 1911 and 1921 Census results, established a convincing link between deaf mutism and rubella.

Knibbs justified the inclusion of a question about race as 'important for the Commonwealth Representation Act, which expresses the determination of the people of the Commonwealth to preserve their country as a white Australia'. While the racial question was principally concerned with European and non-European origins, full blooded Aboriginals in accordance with section 127 of the Constitution were not included in reckoning the numbers of the people. Not until 1933 were collectors instructed to gather as much information as they could about Aboriginals 'in employment or living in proximity to settlements'. Only after the repeal of section 127 of the Constitution in 1967, did the focus shift to identifying for policy purposes an 'Aboriginal/Torres Strait Islander' population rather than a European one. Seventy years after Knibbs introduced the race question, the discredited concept of a 'European race' was dropped. Information sought thereafter about country of birth, citizenship, and language use reflected the concerns of a multi-cultural society; and the large number of persons identifying themselves as Aboriginal (40 per cent more in 1976 than in 1971) demonstrated a radical shift in attitudes.[57]

One of the most controversial aspects of the 1911 Census was the Statistician's calculation of the population of the States which showed that both federal and State inter-censal estimates had consistently overstated each State's population. Bickering over the reasons for the discrepancies did not disguise the real cause of concern — every head less was 25 shillings less in a State's coffers from federal contributions. The Commonwealth steadfastly resisted a call for a statisticians' conference to re-examine methods of calculating population. Believing themselves to be 'men competent to discuss the matter, and who have had the practical handling of Australian Statistics for many years', the State statisticians convened in Sydney in March 1912 and agreed on recommendations for compilation of overland migration figures. They also urged the Commonwealth to resume collection of interstate trade statistics and passed a ritual resolution in favour of a quinquennial census limited to 'sex and locality'. Incensed by a press statement by King O'Malley, Minister for Home Affairs, blaming the States for the 'dilatory supply of statistics', and threatening the establishment of 'Commonwealth Statistical Bureaus' in each State, they wrote to Knibbs asking if he was in sympathy with this view. They could not have been appeased by a reply suggesting the impropriety of asking for a comment from an official about a Minister. 'The facts will, of course, speak for themselves' Knibbs concluded.[58]

From its earliest days, the Bureau published regular bulletins on finance, population and vital statistics, production, transport and communication, and social statistics. From 1910 onwards, in a political environment increasingly concerned with inflation and employment issues, substantial effort was devoted to studies of employment, wages, prices, and the cost of living. Data from a household budget survey, in which only 222 out of 'approximately 1,500' account books dispatched were returned, were subjected to exhaustive manipulation. Knibbs expressed his regret that only 9.4 per cent of the families who embarked on the exercise 'persevered' throughout the twelve month period required. He compared Australians unfavourably with 'the masses of the community' in the United States and Germany whose performance on similar projects had demonstrated their understanding that 'sociological knowledge can contribute to national success'. Optimistically, Knibbs tried again in November 1913, inviting volunteers to fill in a detailed record of income and expenditure for a month. Of 7,000 sets of papers distributed only 392 usable budgets were returned. Although the sample left much to be desired, the analysis was suggestive, and once again included calculations of average weekly expenditure on food weighted for age and sex which were comparable with the most advanced contemporary overseas methodology. Nearly 50 years elapsed before the Bureau's next social survey venture—the labour force survey.[59]

In a report on *Social Insurance* written after his European trip of 1909, Knibbs noted the need for more information about unemployment before the impact of a scheme of insurance could be assessed.[60] Fired by the 'entirely new development' represented by Winston Churchill's plans for national labour exchanges and compulsory unemployment insurance, Knibbs devised a new Department of Labour and Statistics 'to co-ordinate and centralise the Commonwealth agencies dealing with labour, industrial and statistical matters'. The Statistician envisaged detaching this Bureau from the Department of Home Affairs, adding responsibility for the administration of the Conciliation and Arbitration Acts from the Attorney-General's Department, and establishing a network of labour exchanges.[61]

Early in 1911, the Labour Minister for Home Affairs, King O'Malley, had directed his permanent head, David Miller, 'to eliminate the red-tape circumvention, the needless multiplication of records, the grave waste of time and the most useless expense' which allegedly characterised the 'ptolemaic business system' of his department.[62] But, while he was emphatically in favour of more autonomy for the 'sub-departments' of his Ministry responsible for electoral, meteorological, and statistical matters, O'Malley's low standing in the government made Knibbs' ambition unattainable. Even the Statistician's more modest wish to establish the Bureau alone as an independent department with himself as a 'permanent head' with 'the necessary powers, as to organisation, control, and discipline' was, as it turned out, some 60 years premature.[63]

Within the Bureau a Labour and Industrial Branch was set up in 1911 and was responsible for reports on *Prices, Price Indexes and Cost of Living in Australia, 1891 to 1912* and *Trade Unionism, Unemployment, Wages, Prices, and Cost of Living in Australia 1891 to 1912.* A Labour Bulletin began publication in 1913 covering industrial conditions and disputes, unemployment, retail prices, house rent, and cost of living, wholesale prices, and wage rates. Although much criticised by later officials and scholars, this was pioneering work providing information where previously there had been none and authoritative data for the Arbitration Court's deliberations on wages.[64]

In taking stock of the progress of official statistical endeavour by 1914, Knibbs commented that the compilation and computation of statistics relating to production, including agricultural, pastoral, dairying, mining, manufacturing, forestry and fisheries, remained the province of the States. He lamented the absence of a single centre where 'all the details are available for systematic study' and opined that 'the latent powers' of the Commonwealth might need to be exercised to secure uniformity, efficiency, and reductions in cost. Another handicap to be overcome was the difficulty in recruiting, housing, and retaining staff with 'considerable powers of analysis, aptitude for original research, and the special ability to penetrate the hidden significance of statistical data'.[65] The staff difficulty was shortly to be compounded by the enlistment of Bureau personnel and the transfer of others to wartime duties in other spheres. By 2 November 1916, only 15 of the staff of 27 remained, and the 44 year old Wickens who was married with children, had to be restrained by the Minister from joining the infantry following the failure of the conscription referendum.[66]

Shortly after the outbreak of war in 1914, Knibbs circulated an 'urgent' letter to his State colleagues recommending that production and trade statistics should henceforth be compiled on a fiscal year basis rather than from calendar years or agricultural years (which ended either on February 28 or March 31). J.B. Trivett of New South Wales was the first to respond favourably. South Australia's new Statist, W.L. Johnston, advised in July 1916 that he had agreed with his predecessor that the statistical year should in future end on June 30. 'I have little doubt', Knibbs wrote, 'that . . . all will eventually fall into line'.[67]

One way of ensuring uniformity was for the Commonwealth to take over the State bureaus. King O'Malley, once again Minister for Home Affairs, was able to persuade the Acting Prime Minister, George Pearce, to propose that the Commonwealth 'should assume the duty of compiling and publishing all Australian statistics'.[68] But the States proved uniformly unenthusiastic. R.M. Johnston of Tasmania advised his Premier that 'such a scheme of transfer and monopoly, of the right of publishing all statistics' would be detrimental to State interests.[69] In South Australia, where all statistics were collected under the authority of the Commonwealth Census and Statistics Act and little was collected beyond what the Commonwealth required, there had been a deliberate avoidance of duplication in tabulation, compilation, and publication. The South Australian statisticians believed that continued compliance with Commonwealth requirements, together with discontinuance of the vital statistics operations of the Registrar General of Births, Deaths and Marriages, would make a transfer of control unnecessary.[70] In Victoria, the Chief Secretary warned that the discontinuance of State statistical endeavour would be 'crippling' to Parliament and Royal Commissions and inconsistent with the State's dignity.[71]

A motion in favour of amalgamating the statistical bureaus of the Commonwealth and the States was actually carried at a conference of Ministers in Adelaide in May 1916. But, after two years of desultory deliberation, the States announced via a memorandum from the Premier of New South Wales on 2 July 1918 that 'under the circumstances it is not proposed to take any further steps to give effect to the resolution passed at the Conference'. Although 'many manifest disabilities' were cited as more than counterbalancing any advantages that might accrue from amalgamation, no specific 'disabilities' were identified by the States. R.M. Johnston had once complained to Knibbs of 'frequent changes made by your central bureau without previous warning, and the gradual growth of details under various categories from year to year'. Clearly, while Johnston and other statists might continue to co-operate and to espouse a doctrine of uniformity, they remained unwilling to surrender the autonomy which they and their predecessors had enjoyed for so long.[72]

While State statisticians were resolute in maintaining their freedom of action, the exigencies of war—the need for what Prime Minister Hughes called a 'great scheme of organisation'—produced a War Census Act in July 1915 that imposed significant duties of disclosure and compliance on the Australian public. The onus to obtain, complete, and return the schedules was placed on respondents who were required to provide information not only about the present occupations of males aged eighteen to 59 but about other occupations they were capable of undertaking. The 'personal' card also asked questions of direct concern to military and security authorities—about health, military training, possession of firearms and ammunition, birthplace, and citizenship. A 'wealth and income' card sought details from all persons over eighteen not only of 'income' and 'property' but also about ownership of motor cars, motor cycles, other motor vehicles, and traction engines, and 'the kind and number of any other vehicles'. Information was also required on horses and foals (by sex and use), cattle (including working bullocks), mules, camels, sheep and pigs.

Using lists derived from their card indexes, the war census staff were able to facilitate the issue of recruiting appeals to all males other than the enemy subjects aged between eighteen and 45; and war loan appeals and prospectuses were dispatched to persons who had disclosed that they were 'in possession of £1,000 or upwards'. Complete lists of those born in enemy countries or whose parents were enemy aliens were 'prepared for the information of the military authorities'.[73]

Suspicion that the census of income and wealth was a prelude to fresh taxation imposts led to 'conservative' estimates. There was evidence that some parents omitted to record the property of children under eighteen, and some older pensioners may not have filed. Nevertheless, in spite of the problems caused by those whom the South Australian Statist described as 'the simple minds of the community', the inquiry was a uniquely revealing exercise which, as the 1925 *Year Book* candidly admitted, was unlikely to be repeated in 'normal' times because of its 'inquisitorial character'.[74]

While conscious of the deficiencies of the war emergency census, Knibbs urged the desirability of distributing wealth and income forms with each decennial population census. The Statistician suggested:

> In those cases in which there is an objection to disclosing the particulars, in respect of wealth and income to a local resident (the collector) even though under an oath of secrecy, arrangements could be made for the collector to furnish an envelope for the transmission of the form post free to the Commonwealth Statistician, and could, by a note to this effect in his record book, ensure that the person to whom the envelope was issued would not be overlooked in the event of default.[75]

Following several months in England in 1919 as the Australian representative on the double taxation sub-committee of the Royal Commission on the income tax, Knibbs had concluded that it would be desirable to collect more statistics on taxation of income and land. He reported to Stonham that there was a growing feeling in Britain that:

> . . . there will have to be a heavy wealth tax, and that the nation's well-being will not allow the War Debt to be a perpetual charge on the nation's productive activity . . . I am hoping, that in these, as in other matters, we shall be able to set the pace in Australia.[76]

But in the debates on the legislation required for the 1921 Census, the Labor leader, Frank Tudor, quoted correspondence in which Knibbs resiled from his support for a contemporary income and wealth survey which he now said was unnecessary, inconvenient, and impracticable. Reliance would be placed henceforth on inventory estimates of wealth, Knibbs having already advised the government that 'any estimate of wealth based on probate returns must take into account at least five, or still better, ten years' experience'.[77]

Early in 1920 Knibbs attended the first Empire Statistical Conference in London. In preparing for the Australian submission to the conference, Knibbs had compiled a comprehensive memorandum which advanced the case for an Imperial Statistical Bureau. Reflecting his experience at the head of a federal agency, Knibbs argued that the prestige of an imperial bureau would be 'a more potent factor in the introduction of uniformity that any number of Statistical Conferences'. Continuity would also provide regular analysis not available from 'the intermittent conference method of control' or a 'mere summarising agency'. Among Knibbs' observations was a condemnation of existing statistics on unemployment as 'meagre and unsatisfactory'. He emphasised the need to measure the 'efficiency' of labour and of manufacturing on a common basis, and saw an urgent need for better data on industrial disputes.[78]

G. H. Knibbs

In a letter to Stonham from London, Knibbs foreshadowed that 'we shall have to enlarge Industrial Section's work, and in a way which will take account of the industrial drift . . .'.[79] Knibbs had been developing his thinking on the social issues of the post-war world. 'The potential multiplying power of the human race' was a growing preoccupation leading to an increasing concern with questions of race hygiene and migration. His changing interests, and the challenge of a new task, led Knibbs to accept the invitation of the Prime Minister to take up the directorship of the newly created Bureau of Science and Industries in 1921.[80]

In the fundamentally unpropitious environment of an emergent Commonwealth, Knibbs had built an organisation that was respected by those whose judgment was not impaired by jealousy or political and institutional antagonism. He had coped with a dizzying succession of Ministers, creating and maintaining a high reputation for professional competence and integrity. Occasional controversy and collisions of personality did not detract from the basic achievement and growing authority of what had become a secure element of the federal administration. The New Zealand Government Statistician, Malcolm Fraser, had written to his Australian colleague in 1919:

> I know that on account of your experience and pioneer work in Australia you would bring more initiative and influence to the Conference [of Empire statisticians] than any other Representative, and without your assistance the work of the Conference would suffer. I freely acknowledge New Zealand's indebtedness to you; your work in Australia has been a constant help and inspiration to us here. I notice also the Director of the new Statistical Office, established in South Africa, in his Year Book, which is so closely modelled on the Commonwealth Year Book, makes particular acknowledgement of your help and advice. No other Statistician in the Empire is so well known nor is there any whose views carry more weight—but your reputation is not confined to the Empire; it is world-wide.[81]

These unsolicited remarks, prompted neither by a valedictory occasion nor the hope of preferment, were a fitting tribute to the work of the first Australian statistician to bear national responsibilities.

PART IV

THE PATH TO UNIFICATION

THE WICKENS DECADE

CHARLES WICKENS had not disguised his ambition to succeed Knibbs and he was indisputably the most able professional statistician on the Bureau's staff. As Supervisor of the Census since 1912, he was by the end of 1918 being paid a salary of £606. On the basis of merit reflected in a salary differential of £66 and his status as a 'professional' rather than a 'clerical' officer, Wickens had argued unsuccessfully late in 1918 that he rather than John Stonham, the 'Chief Compiler', should act as Commonwealth Statistician during Knibbs' absence overseas.

Atlee Hunt, Secretary of the Department of Home and Territories, formally advised the rivals at that time:

> . . . this decision in no way limits my complete freedom of recommendation in case a vacancy should occur in the office of Statistician, as in my judgment, the principles which should guide selection for acting and for permanent appointments are quite different.[82]

Wickens' appointment as the second Commonwealth Statistician in August 1922 (and the addition of the title 'Actuary' in 1924) was emphatic recognition of the outstanding place he already held in the Australian statistical community. His selection, from a field of seven, brought to the helm of the Bureau a man not only widely respected for his professional attainments, but with gifts of personality which his predecessor had lacked. Fortunately for Wickens, the passage of years had removed some of those State officials whose resistance to change had so frustrated Knibbs. By 1922 the Bureau's role was established and Federal–State co-operation was a habit rather than a novelty. But Wickens' own warmth and tact were now to be key elements in the greater harmony which characterised the 1920s.

A new mood was quickly sensed. As the delighted South Australian Statist put it after meeting Wickens for the first time at a conference in Melbourne in October 1923:

> . . . the atmosphere . . . and the results arrived at were an agreeable surprise to myself and I think also to the other delegates judging by after conversations. Whatever the ultimate decision of the States be [on unification] it is quite certain that the Conference was very effective in creating a much clearer and favourable understanding of the proposals of the Commonwealth, thanks largely to the genial personality of the Chairman and his lucid statements and sympathetic recognition of the local points of view.[83]

Within the Bureau, Wickens moved swiftly to fill consequential vacancies and clarify duties. To his previous position of Supervisor of Census he promoted E. T. McPhee. However, in a reversal of the classification he had argued for a decade earlier when seeking to have his own status made comparable to two of his 'professional' colleagues, Gerald Lightfoot and F. W. Barford, the Supervisor was now graded Clerical (Class 1) rather than professional (Class B). 'As the duties of the position are neither more nor less professional than those of the other senior positions in the Bureau,' Wickens contended, 'the distinction at present existing is undesirable'. For the disappointed Stonham there was the compensation of a new title as Editor, Official Year Book, and a salary increase of £24 a year. Stonham's position was to be placed in the special 'A' class of the Clerical Division, and he was to be responsible for editing the *Quarterly Summary* and the *Pocket Compendium* as well as the *Year Book*, and for 'general supervision over all matters involving printing and publishing'. With Wickens' own salary £250 less than Knibbs', and McPhee's lower by £158 than his predecessor's, the new Statistician was able to show net savings on Bureau salaries of £484.[84]

C. H. Wickens

Before his promotion, Wickens had already embarked on a campaign to enlarge the Bureau's role as a central tabulating agency for the government. There had been public talk of reducing the cost of the census by £10,000 to £12,000 by the use of leased tabulating equipment. As *The Age* commented on 4 August 1919, 'machines are now in existence that can automatically count, sort, and add, and do other wonderful things, seemingly bordering on the miraculous'. For the analysis of the 1921 Census data, collected by a team of 11 deputy supervisers, 75 enumerators, 979 sub-enumerators, and 9,500 collectors, electrical machinery and 'Hollerith' cards were supplied by the British Tabulating Machine Company. The Commonwealth signed a five year agreement under which, for £1,580 a year, it had the use of three counting machines, three sorting machines, and a counter tabulating machine. A company mechanic was made available for an additional £1,600 a year. So impressed was he with this equipment, and evidence of economies from overseas experience, that Wickens urged its wider use in a series of minutes to his departmental head. Having established the value of machine tabulation on census data, he pointed to trade and customs, and labour and industrial branch activities as promising areas for development. By November 1922 'dual' cards had been produced on which vital statistics could be recorded in the State registration offices both in writing and in punched form. But overtures to other departments and authorities—Postmaster-General's, Railways, Treasury, Trade and Customs, and the Commissioner for Taxation—were all rebuffed.

Wickens restated his case in July 1923 in the hope that the newly created Public Service Board might be moved to act under Section 17 (1) (a) of the Public Service Act which empowered it to 'advise means for effecting economies and promoting efficiency in the management and working of Departments'. 'I am convinced,' he pronounced:

> that any one who has had practical experience of the efficiency, economy, and adaptability of the tabulating machinery would as little decline to use it as he would decline to use a typewriter or a comptometer after having become acquainted with their respective capabilities . . .

> The following are the principal advantages of a central tabulating bureau as compared with a number of small installations:
> (i) Regular supply of data; ensuring continuous working.
> (ii) Continuous running; enabling expert staff of operators to be organised.
> (iii) Concentration of plant, facilitating effective and economical supervision of operators and plant.
> (iv) Derangement of work due to temporary incapacitation of a machine minimized when other machines are on the spot to take up the running.

Notwithstanding the cogency of this classic argument for the centralised provision of tabulating services, Wickens met the resistance to be expected from public service barons jealously patrolling their ramparts. In the U.S.A., South Africa, and Egypt, staff savings of at least one-third had been made in tabulating trade and customs data, the statistician reported enticingly. 'The machinery method is as far ahead of the hand method as the motor car is ahead of the bullock dray' he affirmed unavailingly for those of his colleagues who were better at images than figures. Two years later, after an experiment on Victorian trade for February 1925, E. T. McPhee submitted a comprehensive proposal for centralisation of all machine processes of purchasing and tabulating trade statistics which Wickens estimated would produce cost savings of 15 per cent within three months. Trade and Customs was predictably unmoved. In a somewhat mischievous re-opening of the dialogue in 1927, the Comptroller-General of Customs passed on a suggestion from the Tasmanian Collector of Customs that if State statistical organisations were progressively to come under the aegis of the federal government there might be salary savings if the State organisations were placed 'under the control of the Customs Department'. It was the Bureau's turn to repel boarders. Responding to the Customs proposal on the basis of briefing from the Deputy Statistician, L. F. Giblin, and the Acting Statistician, McPhee, the Secretary of Home and Territories returned a chilly reply on 26 May 1927:

> . . . I am directed to state that it does not appear that any appreciable saving in money or staffs would be effected . . . However, if definite evidence of overlapping or duplication in specific cases is supplied, consideration will be given to the best means of obviating such overlapping or duplication.[85]

What had given some plausibility to the Customs gambit was the successful negotiation of arrangements for the transfer of the Tasmanian statistical bureau to the Commonwealth. The Prime Minister, Stanley Bruce, had persuaded a conference of Premiers and Ministers in May 1923 that it was 'desirable that one statistical authority shall be established' and that a statisticians' conference should be convened to make recommendations. Under Wickens' chairmanship, a conference was held in October 1923 and produced a scheme designed to lead to 'the greatest attainable uniformity, efficiency, and economy in whatever arrangements might be made eventually by the several Governments'. Although Queensland showed some inclinations towards unification, and Victoria entered into comprehensive negotiations, it was Tasmania which took the lead. Realising that there was no prospect of the State ever being able to provide adequately for the necessary statistical work, L. F. Giblin (who had succeeded R. M. Johnston late in 1919 and had the confidence of his government) was a strong advocate of a federal takeover. 'At present,' Giblin had confided to Wickens early in 1924, 'we have three [temporary staff] . . . and at that can barely keep up—and are in fact all the time behind hand in most things'. Supplying agricultural statistics was a particular problem in Tasmania, Giblin noted, because:

> (1) The farmers supplying the statistics are often without education and indifferent or hostile to giving the facts.

> (2) The data are not given direct but are collected by Police Officers who may be indifferent or careless . . . collection of these statistics can be a pure farce, and has been in many cases.[86]

Unification of the Tasmanian and Commonwealth bureaus would assist in bringing down the curtain on the farce. It would also end the undesirable necessity to vote 'considerable sums' to enable the compilation of Tasmanian statistics to be, as Wickens put it to J. G. McLaren, his departmental head, brought up 'to the level required for Commonwealth purposes'. It took only a day of discussions between Wickens and Giblin to reach an understanding that proved acceptable to their respective governments. The agreement, which had been reached before the 1923 conference of statisticians, was embodied in legislation by both the federal and State parliaments and came into effect from 13 November 1924.[87]

In addition to the formidable Major Giblin—soldier, sportsman, adventurer, politician, and adviser to the Tasmanian Premier, J. A. Lyons—the merger of the two bureaus brought into the Commonwealth service a team of talented and uniquely qualified young men. Giblin had encouraged and supervised the Commerce degree courses of four Class 5 officers: C. L. Steele, K. F. Andrews, S. E. Solomon, and K. M. Archer. The agreement with the Commonwealth incorporated provisions under which each could continue his studies and receive a refund of fees in return for undertaking to remain in the public service for five years after graduation. The indentured junior officers were a precious resource, and Giblin and Wickens subsequently pressed for financial incentives (through reclassification of positions) to retain their services. As Giblin commented in 1927:

> The experiment in the appointing and training of officers for the Statistical Service has, in my considered opinion, abundantly justified itself. They have all four reached a high degree of competence for difficult statistical work—a very high degree considering the comparatively few years they have been engaged in it. This competence is combined with a keen interest in the work, and the growth of a strong professional spirit which has made this office the very antithesis of the popular conception of a Government Department.[88]

Wickens needed no convincing. He had himself lamented to Giblin some years earlier: 'Here in Victoria the entrance to the Commonwealth Service is still choked with returned soldiers who passed a relatively light examination in 1920 and have not yet been all absorbed'. While particularly solicitous for the four young men whom Giblin commended for having 'equipped themselves by a long and severe University training, undergone at great sacrifice of their leisure and recreations, . . . showing daily an exceptional capacity to deal with problems which the ordinary clerical officer could not touch', Wickens was also a strong advocate of the claims of the Bureau clerical staff generally for a review of their status and salaries. The staff themselves drew attention to the growing complexity and wider scope of their duties resulting in part from the removal of their headquarters to Canberra in 1928:

> Since the transfer of the Bureau to Canberra it has been brought into closer official proximity to other Departments than was formerly the case in Melbourne, with the result that the central staffs are now availing themselves more and more of the services of the Bureau. In fact there are very few questions of political or of other importance which arise without the Bureau being asked to prepare and submit some matter on the subject.[89]

In a memorandum to the Secretary of the Department of Home Affairs in January 1930 supporting renewed representations by his staff, Wickens alluded incidentally to the progress towards unification of statistics under his stewardship:

> . . . it cannot be too strongly stressed that this Bureau, being recognised universally as the coordinating, interpreting and publishing authority in respect of statistics for the whole of

> Australia, the responsibility for accurate and comparable information is very great. It is in this regard that the work of the Annual Statistical Conferences has its origin, the Bureau in the majority of cases taking the initiative towards securing uniformity in collection and presentation.[90]

In regularly bringing together the statistical fraternity, Wickens reversed the practice of Knibbs who eschewed conferences after 1906. Those statisticians who were most resistant to what they saw as Commonwealth incursions believed, as H. A. Smith of New South Wales advised his government, that 'All desirable uniformity can be obtained readily through periodic conferences of Statisticians'. While conceding that there was some apparent duplication in the collection of vital statistics, and information on wages, prices, banking, and insurance, the overlap was more nominal than real, Smith contended.[91] In the event, a succession of annual conferences (interrupted in 1927 by several overseas absences) had brought increasing co-operation and rationalisation.[92] Although the Victorian Government offered to transfer its bureau to the Commonwealth in 1925, Treasury insisted that the federal financial program made it impossible for the Victorian offer to be accepted. Wickens had to admit by February 1930 that, notwithstanding the stalling of unification, the conferences had been 'effective in greatly improving the statistical work of Australia and in bringing about certain of the improvements aimed at in the proposals for unification'. He remained convinced of the desirability of unification but realised that there was no prospect of a national government voluntarily assuming the additional £40,000 a year he estimated as the cost of performing the work being done by the States.[93]

Forty permanent officers of the Bureau and four temporary staff were transferred from the Rialto Building in Collins Street, Melbourne to Canberra in July and August 1928. Accommodated initially in the Commonwealth offices at 'West Block', they made detailed plans to move to the Hotel Acton only to be informed at the end of June 1930 that this supposedly cost-saving relocation could not proceed because of 'the present financial situation'.[94] A more serious problem was the scarcity of housing for single officers of whom 23 were placed in boarding houses or private billets. Wickens was particularly concerned about the female staff. It was desirable, he submitted that they be housed together:

> . . . so that the elder girls may be able to look after the younger girls to some extent, and in the majority of cases the parents have made it a condition of the girls coming to Canberra that Miss Paterson or Miss Miller will look after them. If they are to be housed in different hostels this will be impossible . . . There is also a strong objection by all the girls to sharing a room, and this condition may preclude some from coming to Canberra. It will be seen, therefore, that apart from the wishes of the girls, the position in its effect on the work of the Bureau may be very serious as trained Hollerith Machine Operators are extremely difficult to get owing to the limited use of the machines in Australia.[95]

Anticipating further difficulties in assembling in Canberra the army of temporary staff that would be needed for the 1931 Census, Wickens had warned in March 1928 that it might be necessary to establish a census branch in either Melbourne or Sydney. The prospect of additional expense as well as the practical problems of attracting and housing an influx of census workers to the bush capital contributed to the misgivings of the Scullin Government about proceeding with the 1931 Census. As the financial situation deteriorated, fears that the Ministry contemplated abandoning Canberra altogether were reflected in a specially written article in the 1931 *Year Book* on 'Canberra, Past and Present', a plea for the viability of the national capital.

Planning for the Census had begun in 1928 and Wickens recommended that the date be set by proclamation for midnight, 30 June 1931. In advice to his permanent head, he outlined the additional questions which had been agreed at a conference of statisticians in September 1929:

(i) Race, (particularly whether of European race or not).
(ii) Whether on active service abroad during the war of 1914–18.
(iii) Income group in the case of persons with annual incomes of £300 or less.
(iv) Unemployment, time lost and cause.
(v) Number of dependent children.
(vi) Number of horses and poultry.

The question on income was modelled upon one included in the New Zealand censuses of 1921 and 1926. Because information was already available on incomes greater than £300 through income tax statistics—which Wickens argued should be tabulated annually by the Bureau—the question was limited to income of £300 and below. Nevertheless, the introduction of any inquiry into income in an ordinary census was, Wickens believed, unique 'in any part of the world except New Zealand'.

Compared with Britain and most of the Dominions, however, Australia was deficient in orphanhood data. The draft 1931 schedule therefore required all persons under fifteen years old to state whether their parents were living or dead. This useful additional information was, to the chagrin of later generations of demographers, gained in substitution for fertility data—the question on children from existing or previous marriages being dropped 'owing to the labour and expense involved'. One of Wickens' major preoccupations after the 1921 Census had been classification of industry, occupation, and grade of labour. Paying tribute to what Wickens (and his successors) had achieved, Giblin concluded in 1936:

> We shall henceforward be able . . . to compute accurate birth rates, death rates, and marriage rates by industries and occupations, and so get for the first time information about different fertility and reproduction rates in respect to occupation.

Unfortunately, the wording of the relevant question blurred the intended sharpness of distinction between industry and occupation. Nevertheless the Census was to yield fuller information on economic condition and status by industry and occupation than ever before.

For the administration of the census it was intended to follow the practice introduced in 1921 of using electoral office staff as collectors. In order to ensure proper supervision, Wickens first proposed that 'the whole work of coding, punching and tabulating the data' should be carried out in Canberra. But the realisation that sufficient temporary staff could not be found in Canberra, combined with the knowledge that the whole census exercise was expected to cost £316,000, was enough to convince the government that postponement of the census had to be considered. With the financial crisis deepening, the Minister for Home Affairs, Arthur Blakely broke the news personally to Wickens on 6 February 1930. 'I very greatly regret the necessity which has arisen for even considering such a proposal,' Wickens responded, 'but I realize that when a position arises which is as serious as the present every possible sacrifice must be made to balance our budget'. (On the same day, the Prime Minister and Treasurer issued a joint statement denying rumours that Australia was about to postpone interest payments on its overseas loans.)

Amending legislation was passed in time to allow for a later census. While sharing the sentiments of his State colleagues, who moved a mild remonstrance at their meeting in Brisbane in May 1930, Wickens admitted to being impressed with the view expressed by the Prime Minister 'that the owner of starving stock would be better advised to spend existing funds in feeding them than in counting them'.[96] It was the newly elected Lyons Government which perceived that it was possible to feed at least some of the starving stock by counting the others. On 1 July 1931, the Labor Ministry had decided to further defer the census from 1933 to 1935. But in January 1932, Archdale Parkhill took the question to Cabinet with the strong recommendation of the

Acting Commonwealth Statistician in favour of the earlier date. Revised estimates suggested a total expenditure of £275,000 mostly over the period 1932–36, with the possibility of off-setting revenue from 'advertising on the census schedules'. A more compelling argument was that 'approximately 80% or £220,000 would be disbursed directly as wages'. When the statisticians met in conference in Sydney in August 1932, they pressed in addition for the allocation of some unemployment relief funds to 'the employment of clerical workers for working up valuable material which lies unused in the offices of Statisticians'. The statisticians did, however, agree to omit questions on loss of limb or eye, ability to read and write English, materials of roof, and horses and poultry (except in Victoria).

In inviting the federal government to be represented at the Sydney conference, the New South Wales Premier, J. T. Lang, had written:

> As no conference has been held since May, 1930, the need for a general meeting has become urgent since, in addition to the old problems which are awaiting a definite decision, and consequent action, a great variety of new difficulties now confront the statistician owing to the great divergence of the Australian pound from the pound sterling and of sterling from gold.

In 1930, it had been resolved that each State would supply the Commonwealth with as much information as possible 'in respect of the existence of unemployment and of the results of efforts to relieve it'. By August 1930, it was agreed that monthly reports 'embodying any information available from State sources on unemployment' should be circulated. But, in resigned recognition of the inadequacy of their statistical endeavours in the face of the economic catastrophe, it was noted that 'unemployment registrations were of very doubtful significance, but that expenditure on unemployed relief would often give useful information'.[97]

Pressure to hold the census in 1933 came from a variety of groups including the Australian Association for the Advancement of Science and the Federated Clerks' Union, the latter sending a deputation to the Minister on 14 April 1932. The clerks pointed out that their members were often the first to be laid off in hard times. They were also unsuited for the manual labour available under the State governments' relief schemes. With '10,000 unemployed clerks' awaiting his decision, the Minister capitulated. In spite of early hopes to employ cheaper female staff, the Bureau was bound by government policy to give preference to returned servicemen. Of the many applications and recommendations none is more poignant than the war historian C. E. W. Bean's letter on behalf of a former captain of his old school, Clifton College ('also the school of Haig and of Birdwood'):

> He is at present getting one day a week's employment as tally clerk on the Brisbane wharfs [sic]. He fought with the A.I.F.—not in any cosy capacity either but, as you would expect of a first class cricketer and footballer, in the thick of it . . . he is unmarried, but I do hope that he will have a chance of employment in Canberra.[98]

The recruitment of temporary staff (and their eventual return by rail at Commonwealth expense to the capital city nearest their home) absorbed considerable energy at senior levels of the Bureau.[99] But of more lasting significance were the promotions and appointments that followed the prolonged sick leave and eventual retirement of Wickens. For some time following the move to Canberra, Wickens had begun to show signs of strain. In mid-1929 he was forced to take two months' leave. 'My illness has been variously described in the press as a seizure and a stroke', he told A. W. Flux of the British Board of Trade on 8 July 1929, 'but if it was either the one or the other, the seizing or the striking, whichever it be, was done very gently . . .'.[100] A year later he was absent for a fortnight with 'nervous dyspepsia'. These gentle warnings came in the midst of a cycle of ever more demanding activities. In addition to the ordinary work of the Bureau, and the progressive practical and conceptual refinements that accompanied the regular conferences with the States, Wickens was personally involved in a series of tasks for which his expertise made him the government's logical choice. He was frequently called on to advise the Royal Commission on National Insurance from 1924 onwards. In 1927 he represented Australia in England at a conference of actuaries and made extensive investigations in Geneva, Berne, and Berlin into social insurance leading to the preparation of the national insurance legislation presented to Parliament by Dr Earle Page in September 1928. Subsequently, Wickens took the leading role in investigating for the federal Cabinet the possibility of applying national insurance to workers' compensation, child endowment, widows' pensions, and government superannuation schemes. These complex matters were on the agenda of a conference of Commonwealth and State Ministers in May 1929 but were set aside after the defeat of the Bruce–Page Government and the onset of the economic depression.

Wickens gave evidence on statistics to the Royal Commission on the Constitution (1927) forcefully criticising Australia's failure to supplement production statistics with interstate trade statistics. He prepared statistics and gave evidence to the Royal Commission on South Australian Finance (1928), and supplied both data and personal assistance to the British Economic Mission (1928). In collaboration with J. B. Brigden, Douglas Copland, E. C. Dyason, and L. F. Giblin (now a Professor at the University of Melbourne) he produced at the request of Prime Minister Bruce the important study, *The Australian Tariff: An Economic Enquiry* in 1929. During 1928 and 1929 he also assisted the Attorney-General's Department in drafting a life insurance Bill. In the following year he was called on to furnish material and appear as a witness before both the Coal Commission and the Parliamentary Accounts Committee (on 'Tasmanian disabilities'). He was a special crown witness before the Commonwealth Arbitration Court in the Basic Wage case and was subjected to lengthy cross-examination by all parties. Other matters claiming his attention included a wrangle with Trade and Customs over adherence to a League of Nations convention on trade statistics and the additional burden of organising the supply of information for the world agricultural census sponsored by the International Institute of Agriculture.[101]

So overwhelmed was Wickens that in December 1929, hardly the most favourable time, he petitioned for the creation of a new position of Assistant Statistician. The appointment was warranted, he said:

> by the growth of the functions of the Bureau, and the extent to which the services of the Statistician are requisitioned by various departments in respect of statistical and actuarial matters. In addition . . . there are at present under consideration certain proposals for extending the tabulation . . . of trade statistics and of statistics of taxation. Any such development will necessarily create heavier responsibilities for staff organization and control and will warrant a corresponding strengthening of the administrative section of the Bureau.

The requested relief was not forthcoming. Instead, apparently without comprehension of the magnitude of their request, the government added still further to the Bureau's work by seeking answers to 29 questions on the cost of living, national dividend, wages, taxation, housing finance, exchange rates, costs of production, and unemployment. Had the Labor Government proceeded with a proposal of their predecessors to create a Bureau of Economic Research, the burden of these wide-ranging inquiries would not have fallen on the Statistician. But, although the legislation had been passed, Labor shelved a project which was suspected by some as a device for subverting the Arbitration Court's independence in wage fixation. Worn out by his endeavours, culminating in the preparation of a statement for the Prime Minister's Department on the advantages to the secession-minded Western Australia of remaining in the federation, Wickens succumbed to a cerebral seizure on the afternoon of 2 February 1931. When it became clear that he was unlikely to return to duty the government took the opportunity to invite Giblin to act as Statistician on the understanding, as Giblin recorded, 'that I should be sufficiently relieved from administrative routine to be able to give the greater part of my time to special investigations required by the Minister'.[102] Giblin's special position was demonstrated by his additional title of Chief Economic Adviser.

L. F. Giblin

The advent of Giblin, who remained Acting Commonwealth Statistician until the end of 1932, accelerated a change in the role of the Bureau which had been gathering momentum under Wickens. Although Wickens, a self taught actuary, was best known for his demographic work, he was also highly respected in the small fraternity of Australian economists. He corresponded with Giblin over fluctuations in exchange rates, exchanged views on Keynes' *Tract on Monetary Reform* ('involves a good deal of unlearning of other theories which regard gold or similar basis as a *sine qua non*'), and joined with Copland, Giblin, and others in forming the Economic Society of Australia and New Zealand. In the Economic Society's journal, *The Economic Record*, he published articles on public debt statistics, 'productive efficiency', the 'relative significance of primary and secondary production', the statistics of factory output and Australian industry, and comparative costs of living. In October 1930 he reported to the Acting Prime Minister on 'stability of currency'. The report was leaked, then released, precipitating criticism of its reflationary recommendations. His responsibility for price indexes also brought Wickens into the centre of the political controversy surrounding the Arbitration Court's basic wage hearings and eventual decision in January 1931 for an emergency ten per cent reduction in wage rates. Having initiated revision of the wholesale price index regimen and the introduction of indices for all capital cities to complement the Melbourne index, he renovated the retail price index by shifting its base from 1911 to the average of the years 1923–27, 'a period in which there was relative stability of prices, and from which there is no evidence of a prospect of marked deviation in the near future'. He then turned to other problems including the collection of information on new capital issues and 'the difficult matter of securing reliable data as to the so-called "invisible imports and exports" '.[103]

In all of these activities, Wickens and the Bureau were drawn ineluctably into public prominence, a development which was discomfiting to his principal subordinate, Stonham. When the statistician begins to 'meddle with economics', Stonham wrote a little later:

> he is liable to incur political odium and to have his standing as a Statistician impugned. (Mr Wickens had an unfortunate experience in this respect as regards currency inflation,

> the disabilities of Tasmania under federation, and so on) . . . it is unwise for the statistician to enter the arena of public controversy. The late Sir George Knibbs resolutely set his face against it, and, in fact was opposed to appearing in the Arbitration Court.[104]

In reality, Knibbs had never shied from publicity, although he preferred to expose the labour branch head Gerald Lightfoot to cross-examination in the basic wage cases.

Stonham's fundamental objection was not so much to the public profile of his former chief who was an eminent and professionally qualified statistician. Nor was he objecting to the close involvement of Giblin, whose standing both as a statistician and as an economist placed him in a category of his own, in the government. (As Chief Economic Adviser, Giblin attended the Premiers' Conference in May 1931 where he came in conflict with J. T. Lang.) By 1933, the issue was different: what should be the role of an economist with no traditional statistical background in the senior management of the Bureau?

FROM WILSON TO CARVER

The economist in question was Dr Roland Wilson, a protégé of Giblin's who had acquired doctorates from Oxford and Chicago and lectured for eighteen months at the University of Tasmania before being installed at a desk in the Statistician's room in February 1932 to assist Giblin on his policy assignments. Wilson has recalled:

> It was L. F., as we used to know him, who brought me to Canberra as a back room boy in the Treasury, allegedly for six months. Those were the days when the only graduates in the Public Service were doctors or lawyers, or a few who did part-time courses after they were appointed . . . I had to be disguised by being put into the Stats. office as a clerk. But on my first day, lo and behold, there was a stopwork meeting. They didn't like the idea of this graduate coming in and threatening their futures . . .

Notwithstanding Giblin's assurance to the staff that Wilson's appointment was only for six months, in December 1932 Wilson was gazetted into a newly created post of Economist at a salary of £970 a year (nearly £300 a year more than the Editor, Stonham, and the Deputy Statistician in Tasmania, H. J. Exley). Wilson's promotion coincided with the return of Giblin to the University of Melbourne, and the appointment of E. T. McPhee to succeed him. McPhee, a Bureau veteran recruited from Tasmania in 1906, had returned from Melbourne to Hobart as Deputy Statistician when Giblin originally left for Melbourne University. He was already 63 in 1932 and apparently accepted the promotion to Canberra on the basis that Wilson was to be groomed as his successor. Wilson himself was not immediately aware of this plan and, in view of the resentment that had greeted his arrival, he could have been forgiven for not foreseeing that five days after his 29th birthday, McPhee would recommend that 'during future absences of the Commonwealth Statistician, the Bureau shall be under the control of Dr Roland Wilson, if he is present'. In explaining the recommendation (and the protest from Stonham which it provoked), McPhee wrote to his permanent head on 12 April 1933:

> I understand that when Dr. Wilson joined the Bureau he did not wish to identify himself with the compilation of the statistics, and did not anticipate that he would be called upon to direct this work in a large measure. From his experience in the Bureau, however, Dr. Wilson has formed the opinion that an intimate knowledge of the various branches of statistics is essential to their proper economic interpretation and he is no longer averse from taking a part in this work.
>
> It is also, I think obvious that as economic opinions must rest largely on statistical evidence, some knowledge of economics is essential to the proper selection of statistical data which

> should be compiled for the guidance of publicists, and to the direction of analyses which should be made of that data by the statistical staff. I feel that statistics and economics are so closely associated that in practice they are inseparable.
> Dr. Wilson during his association with the Bureau, has had frequent conferences with heads of sections or departments of the Bureau work and is almost daily in consultation with one or other of these officers. Consequently Dr. Wilson has acquired a knowledge of the fundamental details of much of the work, and has contact with the daily affairs of the Bureau. The members of the staff readily seek his assistance when they feel the need of it.[105]

Quite apart from Wilson's outstanding ability and training, which put him in a class apart from his talented Tasmanian near contemporaries, Archer and Solomon, what McPhee was testifying to was a basic rethinking of the Bureau's purpose and orientation. The new era was signalled in the *Year Book* for 1932. Issued by McPhee under instructions from the Treasurer, to whom the Bureau now reported, the *Year Book* acknowledged the contribution of Giblin as 'consultant economist'. Publication had been delayed so that the latest statistics relevant to the financial and economic crisis could be incorporated, and the preface pointed out that current conditions had created a demand for 'new information' on trade, production, and industry.

E. T. McPhee

The demand, of course, was for understanding as well as knowledge, for policy prescription as well as diagnosis. From the mid-1920s onwards the Bureau operated in a disconcertingly evolving institutional landscape. A succession of temporary and permanent commissions and inquiries jostled for territory with emerging academic and bureaucratic rivals: the Tariff Board, the Development and Migration Commission, The Royal Commissions on National Insurance and Child Endowment, the British Economic Mission, the Loan Council, Premiers' Conferences, and always the Arbitration Court. The Economic Society, the Australian Institute of Political Science, and the Institute of Pacific Relations provided forums for informed exposition and debate. The Commonwealth Bank occupied much of the policy domain which was increasingly contested by the federal Treasury after the appointment of H. J. Sheehan as Secretary in 1932; and the Bank, stimulated by the visit of Sir Otto Niemeyer and Professor T. E. Gregory in 1930, began to tabulate a range of banking, price, trade, railway, building, assurance, postal, bankruptcy and electrical power consumption statistics to indicate business conditions. A further sign of the times which Wickens had brought to Scullin's attention in February 1930, was the establishment in Queensland of a Bureau of Economics and Statistics under J. B. Brigden. By mid-1931, Brigden was producing an innovative Queensland business index.[106]

Arriving at the Bureau in Canberra when the trauma of depression had placed a high premium on the advice, albeit often contradictory, of economists, Roland Wilson found a fertile field for reform and expansion. The new Secretary to the Treasury, H. J. Sheehan, was inclined to take a more active part than his predecessor in economic policy-making but he lacked the resources and expertise that were directly at Wilson's disposal. Within two years, McPhee and his political masters were convinced that the Bureau could confidently be passed into Wilson's hands. The Assistant Treasurer, R. G. Casey, had at first been inclined to look to England for McPhee's successor; but Giblin persuaded him that British statisticians were too specialised and 'would take several years to learn the job in Australia'. Giblin convinced Casey that:

> . . . Wilson is the obvious man for the job, but that we should keep McPhee on as long as possible in order to give Wilson as much opportunity as possible of picking up the multitudinous threads of the job.

McPhee had been effectively deprived of 'three or four of his best men away on the Census job'. But Giblin believed that 'if Wilson has a good economic offsider, he should be able to give a fair amount of attention to specific Treasury problems'. In a parting public statement, the retiring Statistician confessed 'I have had enough of it':

> The last three years have been very strenuous . . . The extensions of the functions of government and the continually increasing complexity of the social structure demand a continual expansion of the field of statistical inquiry. There is now an army of economists confident that, given sufficient bricks of the right type and quality, a way can be cleared to heaven. It is the statistician's job to provide the bricks.[107]

It was unnecessary for Wilson—whose inclination for a policy role was no secret—to proclaim that he had every intention of building the path as well as making the bricks.

Writing in the first issue of *The Economic Record*, in November 1925, Professor Douglas Copland had lamented that 'Economic research and advice is not recognised as necessary for good government . . .'. The neglect of economic research could partly be explained, Copland suggested, by 'the excellent service rendered by the extensive statistical bureaux of the Governments'. The early volumes of *The Economic Record* gave glimpses of the professional quality and interests of several of the Commonwealth Bureau's staff. E. T. McPhee reviewed books on tariffs and trade, and H. J. Exley, J. F. Barry, W. T. Murphy all contributed articles. J. T. Sutcliffe, already the author of books on Australian trade union history and 'The National Dividend', the latter a pioneering work on national income estimation, defended the Bureau's popularly misnamed 'cost-of-living' index and its unemployment statistics.

But, while the incomparable Giblin remained a regular contributor, even while he was directing the work of the Bureau, the significant initial participation of Bureau staff was not sustained. By the time young Dr Wilson was making tart comments in footnotes in 1931 ('A little more consistency in official statistics relating to such a comparatively simple matter [interest and divident payments abroad] would not be amiss.') no one emerged to reply.[108] A new generation of economists had seized the intellectual initiative by the early 1930s. Copland's students, E. K. Heath and J. Polglaze, for example, set out in 1932 to prepare an index of business activity and found official statistics to be 'quite inadequate necessitating recourse to unofficial statistics'. In 1933, Dr F. R. E. Mauldon, Senior Lecturer in Economics at Melbourne University, in a pamphlet based on a series of broadcasts on 3AR, identified 'some gaps which have still to be covered in the whole field of Australian economic statistics', which might well have been listed on a reform agenda for the Bureau:

> We need more frequent census-taking . . . especially in view of inter-state migration, and it would be of great value to have enquiries made concerning wealth and income at the

> same time . . . In gathering statistics of the production of wealth in Australia the extent of crop failure areas in the total areas under crop in a season is a present serious omission . . . On the mining, manufacturing and building construction sides of production we need to know monthly values and/or quantity of output for all states. To clarify our knowledge of industrial and commercial structure . . . we ought to have data of the size of manufacturing establishments and of the character of ownership (individuals, registered companies, partnerships, co-operative societies, etc.) as distinct from numbers of establishments, or sections thereof, engaged in productive processes. We ought further to have enumeration and classification of wholesale and retail business, records of amalgamations, and records of the nature and membership of trade, primary producers' and industrial associations for mutual interest in business . . .

Mauldon added that statistics of interstate trade should be reviewed and that data on marketing costs, productivity, labour turnover, labour migration, employment, and prices needed to be assembled or augmented.[109] For Wilson, however, the first priority had been the balance of payments. When his special chapter for the 1934 *Year Book* was circulated in advance, Giblin applauded 'this brilliant attack on one of the most important and difficult of statistical problems'. (Brilliant though it was, Wilson's treatment appalled Stonham who, as editor of the *Year Book*, found himself from 1932 onwards obliged to publish tables spattered with question marks where tradition dictated unambivalent precision.) The Conference of Statisticians in Canberra in March 1935 devoted its energies to Wilson's next major concern, production statistics, and agreed on new definitions and procedures covering agricultural, pastoral, and dairying production, mines and quarries. A start was made also on getting the States to prepare a 'key' plan to the statement of social services expenditure by 'functions' with a dissection of all group or composite items. Although McPhee told a British correspondent in January 1935 that the greater part of Wilson's time had 'unfortunately . . . been claimed by the Treasury', Wilson had in fact found it hard to resist probing into most aspects of the Bureau's work. As he told the Secretary of the Treasury in supporting the case for his attendance at the Ottawa conference of Dominion statistical officers:

> There are a number of subjects on the agenda on which I have been doing a great deal of work lately . . . (especially methods of compiling various indexes of prices, methods of calculating invisible items in the trade balance, and classification of commodities on a comparable basis in trade, production and price statistics).

In an interview in 1984, Wilson recalled:

> . . . the more I poked into the compilation of statistics, the more disgusted I got. So it was one subject after another trying to find out just how the figures got put together . . . For instance, the retail price index . . . we were supposed to get returns from every state from a selected number of retailers, the price of a pair of curtains, otherwise undefined. When I looked at it I found the prices varied in some states from 6/11d. to 96/11d. There might be three or four quotes that were solemnly averaged, and that was the price of a pair of curtains.[110]

Wilson's appointment as Commonwealth Statistician and Economic Adviser to the Treasury was effective from 29 April 1936. On that day, a congratulatory deputation led by Horace Downing who had been to the fore in the office protest against Wilson's arrival in 1932, let their new chief know that they thought him the best man for the job. The next day, Wilson called on the Secretary to the Treasury to ask for substantial funds to 'reconstitute' the retail price indexes. 'It hasn't taken the new broom very long to sweep clean, has it?' Harry Sheehan remarked. But the money was found. So too, but more tardily, was approval eventually given for Wilson's scheme to create a new employment category—the research officer—to remedy the Bureau's shortage of staff versed in the economic and technical skills which a changing political environment made necessary. At first, however, he had to rely mainly on such advantage as he could derive from section 36A of the Public Service Act (a 1933 amendment) under which up to ten per cent of each year's appointments to the third division could be of university graduates aged up to 25. (He also contrived to appoint the first female librarian in the Commonwealth Public Service, by devising 'a set of qualifications with appropriate weighting' which ensured the selection of Miss Dora Whitelaw.)[111]

R. Wilson

During the overseas study tour that was planned around his visit to Ottawa, Wilson reported enviously to his political master, R. G. Casey, on the vast resources available to the various American statistical bureaus and New Deal organisations like the Works Progress Administration (WPA), Agricultural Adjustment Administration (AAA), and National Recovery Administration (NRA). 'Doctors of philosophy are as common as sheep in Canberra, and young graduates from the universities simply infest Washington, especially in the new alphabetical agencies.' At Casey's side in Canberra at the time were the young Melbourne commerce graduate J. F. Nimmo, and Wilson's own assistant economist, Arthur Smithies, whose career—from Hobart to Oxford to Harvard and thence via a teaching post at the University of Michigan to the Bureau as Assistant Economist in July 1935—had eerie echoes of Wilson's. With Smithies to understudy him on economic policy, Wilson had promoted H. C. Green from Supervisor of Census to Assistant Statistician at a salary 50 per cent higher than the next most senior officers (though less than half of Wilson's own salary).

In Casey, the Bureau found what no previous Commonwealth Statistican had enjoyed—a Minister who as Assistant Treasurer from September 1933 and Treasurer from October 1935 onwards, was intellectually engaged, influential and, above all, in office for long enough to establish rapport with his advisers. In Wilson, Casey found a mind he could respect and an undisguised expertise of which he was occasionally wilfully sceptical but more often in awe. Jocularly, Casey had sketched the basic problem for Wilson to address in August 1935:

> I am more modest than most—all I want to know is what we should do within Australia to get things moving more quickly without unduly increasing the national debt, and the interest bill, without indulging in what might be described as inflation without risking an undue rise in the exchange rate with sterling.[112]

Fortunately for the Bureau, an economic revival, for which government could take only small credit, ensured that the reputation of its head was not prematurely jeopardised by questionable diagnoses and policy recommendations. By 1937, the

Conference of Statisticians had clearly passed from a world of crisis to one in which it was possible to discuss without anxiety 'matters of statistical importance relating especially to factory output and retail prices'.[113] There was time to reflect on such anomalies as the entirely different meanings of wholesale price indexes in Canada and Australia, and the impossibility of collecting in Australia the kind of data on private finance which was routinely gathered in New Zealand. While for those who pressed the Bureau to publish an index of manufacturing production, Wilson confessed to the Economic Society in Melbourne his suspicion that 'the whole concept of the quantum of manufacturing production' might be 'a mere mirage which lures succeeding generations of statisticians to an untimely and unhonoured end'.[114]

A *Monthly Review of Business Statistics* was added to the Bureau's list of publications in 1937.[115] The following year, the 'A' series retail price index, launched in 1912, was discontinued. The much renovated All Items ('C' series) index was to survive until 1960 when it was replaced by the Consumer Price Index. Wilson's substantial revision of the 'C' series regimen was agreed to in the 1936 Conference of Statisticians. To the Bureau's satisfaction, the Conciliation and Arbitration Commission adopted its own 'Court' series in 1937 primarily, as the Bureau's *Labour Report* explained in 1943, 'for the purpose of removing conditions which tended to engender the impression that the Commonwealth Statistician was in some way responsible for the fixation and adjustment of wage rates'.[116]

Averse as he was to bearing the imputed responsibility for wage rates, Wilson needed no convincing of the necessity for private enterprise to be 'subject to more conscious supervision and . . . more adequate guidance than has hitherto been available'. He had proclaimed in 1934 the need for 'a more vigorous and national control of the machinery for creating and distributing purchasing power'.[117] As governments universally awakened to a similar need and potential for action, the publication of J. M. Keynes's *General Theory of Employment, Interest and Money* in 1936 crystallised a revolution in economic thinking. Keynesian analysis gave a new relevance to economic statistics, particularly to estimates of national income. A pioneer in national income studies, Colin Clark, was appointed to succeed J. B. Brigden as Director of the Queensland Bureau of Industry in 1938. Dr H. C. Coombs, who came to Canberra after the outbreak of war in 1939 as Economist to the Treasury to assist Wilson and Giblin, recalls that:

> with Clark's adventurous simplifications and estimations it became possible to produce estimates contemporaneously, and indeed, by judgment of current trends, events and policies, to produce forecasts some time ahead. For this process the relationships of the Keynesian model of the economic system provided a framework. Better data began to be assembled, techniques improved, and the estimates began to be used, not merely for historical purposes but for analysis; with results which appeared to justify their services.[118]

With preparations for war a growing preoccupation of the Lyons Government, the leader of the Country Party and Minister for Commerce, Dr Earle Page, asked the Statistician to prepare a comprehensive plan for industrial development and defence to be put to the State governments at the next Premiers' Conference. Wilson's submission to Page, on 1 November 1938, advocated the creation of a council for industrial development with an executive officer and secretariat linked to a network of specialist committees. Neither this visionary scheme, nor an alternative devised by Page and his permanent head, came to fruition.[119]

Concerned to strengthen the government's capacity to stimulate and steer the economy, Wilson had proposed as early as 1934 the creation of a central 'thinking agency'. With the coming of war in 1939, the climate was more propitious for a 'central thinking committee'. An Advisory Committee on Financial and Economic Policy, set up late in 1938 to advise the Department of Defence and associated with the new Department of Supply and Development under R. G. Casey from April 1939, was now attached to the Treasury and rapidly granted a broader mandate. The Bureau undertook staff work for the 'F & E' Committee.

From his vantage point on the committee Wilson argued in July 1940 for the establishment of a Department of Labour and National Service with responsibility for vital manpower and labour issues.[120] On his appointment late in 1940 as Secretary of the department he had proposed, Wilson successfully recommended S. R. Carver, Government Statistician of New South Wales since 1938, to lead the Commonwealth Bureau during his absence. 'It is intended that Dr Wilson should resume duty as Commonwealth Statistician as soon as the new Department is satisfactorily established, which I hope may be in six to nine months' time,' Prime Minister Menzies assured the New South Wales Premier. Carver was expected to spend only four days a week in Canberra and his duties would not extend to any of the committee work or the role of Economic Adviser played by Wilson.[121]

Stan Carver, a highly respected statistician, had begun to make his mark in the late 1920s and was appointed Assistant Government Statistician in 1933. In 1936 he visited Britain with the Premier of New South Wales where he called on J. M. Keynes and met the young lecturer in statistics, Colin Clark. His 'extensive unpublished research' on the distribution of income in New South Wales had been prominently used by Colin Clark and J. G. Crawford in *The National Income of Australia* (1938). Outstandingly able as he was, he faced enormous problems in a poorly co-ordinated and rapidly evolving wartime administration. The six months transfer he had accepted was to stretch to the end of the war and beyond. The 'censorship complexity, new income tax data, casualty data and the half dozen other special matters' which he had expected to 'represent a fairly heavy addition to the usual flow' of Bureau work were swept up in a torrent of unanticipated demands. In January 1942, for example, Carver 'became extremely busy on the organisation of the War Statistics Section, which required me to spend a considerable time in Melbourne'. Immediately thereafter he was 'still more heavily occupied in assisting the Director-General of Manpower in the preliminary stages of organising the Civilian Register'. During 1942 and 1943 an 'army census' was carried out and a ten per cent sample was tabulated.[122]

By mid-1943 it had become necessary to reorganise the management of the Bureau to provide more effective support for the Acting Statistician. The Public Service Board approved the temporary elevation of S. E. Solomon from Chief Research Officer to Assistant Statistician (War Statistics) and J. Barry from Senior Clerk and Supervisor of Census to Assistant Statistician (Administrative). J. C. Stephen and K. Archer were also reclassified to handle production and food statistics, and State liaison and 'emergency statistics' respectively. Simultaneously, a brilliant young clerk, H. P. Brown, was promoted to Research Officer. The Secretary to the Treasury had expressed the 'fear that Mr Carver has been endeavouring to handle personally too many of the new problems which have arisen with war-time conditions . . .'. Although Carver was, and remained, an inveterate perfectionist, necessity imposed a greater degree of delegation than he was able to concede in less demanding times. A further reorganisation in September 1944, consequent on Solomon's return to Queensland, saw Barry promoted to Assistant Statistician, and 'second in charge of Bureau'.[123]

The official histories of Australia in World War II have provided authoritative accounts of major statistical endeavours on manpower, production, price control, rationing, and other problems of war. It is clear that the Bureau was overwhelmed by a range of tasks for which it was unprepared and under-staffed. 'Our pool of officers is about dry,' Carver confided to O. Gawler, the Victorian Statist on 9 February 1943, 'we have "diluted" to and beyond safe limits . . .'. Statistical units sprang up to meet the pressing needs of particular departments, but their work was usually narrowly focussed and of transient value. The Bureau itself lent officers to liaise with military authorities or to assist other organisations such as Food Control. S. J. Butlin, himself the Director of the Economic and Statistical Division of the Department of War Organisation of Industry from December 1941 to January 1943, concluded in retrospect:

> Perhaps the worst result of all was that a particularly scarce form of skill was dispersed in isolated sections which it proved impossible to integrate into a single statistical service. The most remarkable achievement, later in the war, of the Acting Statistician was his high degree of success as a peripatetic diplomat in informal coordination of the work of these scattered workers. [124]

THE POST-WAR AGENDA

In January 1944, the Director-General of the Department of Post-War Reconstruction, H. C. Coombs, pronounced:

> The fatalism which regarded the fluctuations of economic activity as something we must take for granted, and the miseries which attended them as inevitable burdens which we must patiently bear, was the first casualty of the war. [125]

The government's commitment to a 'full employment' policy, embodied in a White Paper published in 1945, had great significance for the future scope of the Bureau's role. Stan Carver presciently warned that 'to encourage the belief that it is within the Government's power to maintain a long-term high level of employment was to manufacture political dynamite'. It was also to manufacture a formidable burden for the Bureau. As early as November 1944 Carver commented that 'the post-war deluge of statistical development has begun and we are in no position to meet it with so much personnel away'. [126]

In a memorandum to Carver on 30 October 1945, Coombs sketched the improvements in the range and timeliness of statistics that were essential to full employment planning. Monthly or 'preferably weekly' information on employment, expenditure, and stocks, necessarily compiled on a sample basis, were required. The National Register of July 1939 had revealed unemployment considerably exceeding estimates based on trade union and other customary sources. More frequent censuses or occupational surveys were 'the only means of checking the validity of estimates of total employment, based [since 1941] on Pay Roll Tax and other miscellaneous data, of the number of employed and workers on their own account and of the number unemployed'. Unemployment statistics were now to be tabulated from the records of applicants under the Unemployment and Sickness Benefits Act. (The responsibility for compiling uniform unemployment statistics passed to the Commonwealth Employment Service in 1946.)

For information on past and prospective private capital expenditure, Coombs recommended twice yearly returns from manufacturers, large pastoral and mining companies, construction contractors, private utilities, transport companies, banks, insurance offices, wholesalers, large retailers, 'chain' hotels, restaurants, and theatres. Monthly output statistics for capital goods—the value of output and the volume of production where available—were also to be collected. Motor vehicle, building, and consumer durable expenditure information were desirable as were data on stock volumes. Believing that variations in public capital expenditure would be 'the most important means of affecting fluctuations in other types of expenditure in order to maintain full employment,' Coombs emphasised the necessity both of historical data and forecasts of expenditure and employment on public capital works. The era of national income and expenditure estimates had begun.

Summarising his paper in seventeen recommendations, Coombs concluded that 'as far as practicable, all important statistical information should be tabulated according to the regions determined by each State for purposes of regional planning'.[127] (This visionary proposal, far beyond the resources or the political will of the mid-1940s, was to be revived in the 'urban and regional budget' project undertaken collaboratively by the Bureau and the Department of Urban and Regional Development under the Whitlam Government.) The Department of Post-War Reconstruction participated in a sub-committee of the Conference of Statisticians held in November 1945 which reported on the statistics needed in connection with employment policy. Papers from Post-War Reconstruction and the Commonwealth Bank amplified the outline of 'Essential Information' which had been incorporated in the White Paper on 'Full Employment'. The conference agreed on the desirability of a revised approach to the presentation of public finance and public works data, the subdivision of pay-roll tax statistics into all relevant industry classifications rather than classification according to the 'predominating' industry of the employer, an urgent census of distribution, and more comprehensive building statistics, as well as most of Coombs' other requirements. To meet these needs, it would be necessary, Carver and his State colleagues concluded, to enlarge the trained staff of all of the bureaus 'to a level greatly beyond that of pre-war years'. Recalling this resolution four years later, the assembled statisticians again noted that 'the resources of Australian statistical bureaus are insufficient to meet in full either urgent national demands or international obligations . . .'.[128]

In fact the pre-war Commonwealth Bureau permanent staff of about 80 had already doubled by 1948 (with a further 436 temporary staff), and in the next decade would double again. While in some States the resources devoted to statistical work did not keep pace with the tasks to be accomplished, it became increasingly clear that only a unified national organisation could satisfy modern demands. Even unification, however, could not be expected to overcome genuine conflicts of interest between the Commonwealth and the States. The Chairman of the Commonwealth Grants Commission, A. A. Fitzgerald, reminded the Prime Minister on 21 August 1946 of the difficulties posed by 'the lack of uniformity in the financial practices and accounting methods and in the manner of presentation of the public accounts of the several States'. But, as a meeting of Grants Commission, Treasury, Commonwealth Bank, Post-War Reconstruction and Bureau of Statistics officials concluded on 12 December 1946, the possibility of persuading all States to publish supplementary tabulations was remote. The practice of transferring moneys to or from extra-budgetary funds was unlikely to be abandoned by governments wishing 'to arrive at the surplus or deficit which is considered politically desirable'.

The Bureau continued to argue for an economic classification of 'the true relationship of public finance to the private sector of the economy'. But, although there were marginal improvements, a conference of federal and State finance officers in April and August 1955 still admitted that 'the present tabulations and publications were inadequate'. The potentially dramatic effect of adopting a new functional classification of consolidated revenue, trust and special funds, and the loan fund in Queensland was exposed by Stan Solomon who in a letter to Carver on 29 March 1956 compared the proposed method with that used in the *Finance Bulletin*. Using data for 1954–55, Solomon found that only in one item (railways) did the old system produce something approximating a 'true' figure. Solomon himself was willing to consider a more open approach to what later became known as 'hollow logs'.[129]

During the 1930s, the Commonwealth had not actively pursued the goal of unification. But, as Menzies noted at the time, Carver's dual appointment from late 1940 had 'the further advantage of knitting the work of the Commonwealth and States in the statistical field more closely together'.[130] Although Wilson returned to the Bureau in March 1946, he was increasingly preoccupied with his economic advisory tasks. A planned six months' overseas assignment early in 1948 turned into an absence of fifteen months during which Carver was once again placed in command of the federal as well as the New South Wales bureau. In seeking Carver's services, Prime Minister Chifley was at pains to point out the prospective mutual benefits:

> There may perhaps be a number of ways in which the Commonwealth Bureau of Census and Statistics could be of assistance in helping Mr Carver to carry out his State responsibilities . . . I am hopeful that, if you consent to this proposal, it will enable a closer coordination of Commonwealth and State statistical activities to be achieved. All Governments today are in urgent need of fuller and more up-to-date statistics, and it is believed that this can be realised only by developing the closest possible relationships between the Commonwealth and State statistical agencies.[131]

S. R. Carver

James McGirr's warm endorsement of the objective of 'closer co-ordination' was the crucial turning point on the path to unification. In June 1949, McGirr agreed to the Commonwealth's proposal to house the New South Wales bureau and the three sections of the Commonwealth Bureau operating in Sydney together in Dymock's Building. The Premier endorsed action already initiated 'to unite in joint statistical branches the Commonwealth and State staffs dealing with statistics of factories, building and employment in N.S.W'. To set the seal on these developments he also agreed to Chifley's suggestion that the unification process should continue towards 'some form of comprehensive statistical organisation which would serve the needs of both Commonwealth and State'. To this end, Carver was to be appointed Deputy Commonwealth Statistician (N.S.W.) concurrently with his State position, and the Commonwealth was to reimburse Carver's State salary as well as pay additional allowances. When Wilson finally became head of the Treasury in March 1951, Carver was his logical successor. But the New South Wales Government trembled on the brink of a final decision for integration with the Commonwealth. As a compromise, Carver was appointed Acting Commonwealth Statistician, the status he was to retain until August 1957 when, with integration about to be consummated, it was at last possible for him to enjoy the style and title of Commonwealth Statistician.[132]

The War had caused the suspension of some statistical collections from January 1942 onwards. The census due in 1941 was also deferred. As the War drew to a close, Carver discussed with Colin Clark the timing of the postponed census. Clark was eager to hold an early census and suggested that a family schedule could be collected when ration books were issued in June 1946 (an occupational survey had been taken in association with the issue of ration books in 1945).

But Carver saw insurmountable problems in the shortage of skilled staff and the political sensitivity in 'anything that looks like saying "Fill in this big form before you get a Ration Book" '. Moreover:

> those who have to be convinced do not yet realise that information is essential to the type of future policy to which they are committed. Therefore there is an unwillingness to do unconventional or enterprising things to get information . . .

Carver's preference was for an 'intermediate census' in 1947. He agreed with H. C. Coombs that the occupational survey of all civilians aged fourteen and over taken in June 1945 would provide most of the data obtainable from a personal census. As Coombs advised the Minister for Post-War Reconstruction on 19 October 1945:

> The only important information normally sought in a complete census, which will not be available, is data in respect of dwelling accommodation. As it is already known that there is a widespread and serious shortage of houses and that this is likely to be acute in the winter of 1946 when many demobilised Servicemen will still be looking for homes, questions on dwelling accommodation at that time might arouse public antagonism.

Contrary to Clark, who contended that there was little to be gained by delay as 'nothing really ever settles down properly these days', Coombs and Carver believed that 'population and conditions generally would be too unsettled' to justify a census before 1947.[133] The 1945 Conference of Statisticians had concurred, and taken the opportunity to re-affirm their support for quinquennial censuses, recommending that 'the first post-war quinquennial census be held on 30 June 1947'. (Clark was successful in securing agreement to his proposal to reinstate a question about the issue of marriages which had been omitted in 1933. There were also new questions agreed with the Director of Housing on whether dwellings were built before 30 June 1933, materials of roof, availability of gas, electricity, and running water, existence of bathroom, flush toilet, laundry, cooking facilities, and means of cooking.) The statisticians enjoyed the sympathy of the federal Prime Minister and Treasurer, J. B. Chifley, who nevertheless remitted their proposal for a permanent and substantial nucleus census organisation 'for future consideration by the Commonwealth Statistician, the Treasury and the Public Service Board, with a view to a further submission to Cabinet'. The Treasury alone was to consider the quinquennial census issue before Cabinet was invited to make a decision.[134]

In arguing in 1950 against taking a census in 1951, mainly because of difficulties in assembling the staff of collectors, compilers, tabulators, and draftsmen (for mapping and collectors' diagrams), Roland Wilson pointed out that a census in 1954 'would provide equal inter-censal interval of seven years between the Censuses of 1947, 1954 and (presumably) 1961'. This, he suggested, 'might turn out to be a reasonable first step towards the practice of taking Censuses quinquennially rather than decennially—an objective which we have long had in mind'. In the meantime, data from 1947 and ongoing collections were adequate for most purposes, and postponement to the later 1950s would allow for large numbers of immigrants, both received and projected, to be 'absorbed permanently into the Australian economy'.[135] The case for censuses 'or at least dissected population counts, at short intervals of a few years' was again pressed by Carver in 1959. In a draft Cabinet paper he argued:

> Overall population increase in the seven years 1947 to 1954, an important factor influencing the choice of 1954 as a Census year, was 1,407,172 persons, a number far in excess of any

> previous intercensal increase during this century. By comparison, the increase in the seven years 1954 to 1961 may exceed this number, bringing the population of Australia at mid-1961 to possibly over 10.4 millions. This record expansion will render the Census information currently available quite out-of-date.

There was a further difficulty in measuring the interstate movement of population because of the rapid development of travel by air and road. A Ministerial conference in June 1958 had drawn attention to the effect of increasingly inaccurate population estimates on tax reimbursements grants. Within the Bureau there was also growing dissatisfaction with the decreasingly dependable estimates of employment, unemployment, and work force projected forward from 1954 on the uncertain basis of pay roll tax returns. Heeding these concerns, successive governments consented to a census every five years from 1961. The *Census and Statistics Act 1977* made a quinquennial census mandatory, a fresh impetus having been imparted by a High Court decision of 1976 requiring an electoral redistribution within the life of every Parliament.[136]

The expanding post-war demand from administrative authorities and representatives of primary, secondary, and tertiary industry for innovatory and more comprehensive statistical collections, strained the Bureau's regulatory and organisational framework. All forms, other than those relating to 'factories, mines and productive industries generally' had to be prescribed by statutory rules and gazetted. Only prescribed persons were obliged to complete forms. Experience with the collection of building statistics demonstrated the inconvenience and embarrassment which this cumbersome process entailed. For the fifteen quarterly collections of building statistics from September 1945 to the first half of 1949, new forms had to be prescribed six times. When Carver sought further changes in 1949 to implement a hard won agreement to collect building statistics on behalf of the Victorian Minister for Housing, he learned that it would be at least six months before the necessary rules could be prepared and gazetted. The only alternative to proceeding without legal authority was to change the legislation. Carver convinced Chifley, who in turn carried the Cabinet, to remove the requirement to prescribe both forms and persons.

As a later Bureau commentator saw it:

> No longer would the work of statistical collection be bogged down through the threat, or the fact, of recalcitrant and litigious respondents challenging prescriptive wording on individual collection forms. The fact of being sent a form by the Statistician was to be sufficient to oblige a person to comply with the requirements of the Act, in a stroke "prescribing" both the respondent and the schedule to be completed.

Simultaneously, the Bureau obtained an extension of the secrecy obligations of section 24 of the Census and Statistics Act to cover information supplied voluntarily as well as 'furnished in pursuance' of the Act. The second reading speech explained that statutory authority was now given to the 'unwritten and inviolable law concerning the privacy of information, about individual persons and individual businesses, obtained for statistical purposes by the Statistician'. Henceforth that secrecy could not be violated by regulation or by administrative action. Confidentiality was extended not only to returns supplied to the Statistician (by State statisticians as well as by individuals and organisations) but to copies of returns held by respondents themselves.[137]

In parallel with these regulatory developments came strains on human resources and a re-orientation of the Bureau's function. During the War, the Commonwealth Government had assumed responsibility for national economic management. The High Court's legitimation of uniform taxation and State re-imbursement laid the foundation for a greatly expanded Commonwealth role in the peacetime economy. State government interest in developing the capacity for long term planning was interrupted, and buoyant post-war conditions diminished the imperative to monitor and moderate economic fluctuations. As post-war reconstruction lost its momentum, federal policy initiative was grasped by the Treasury whose ascendancy was both symbolised and assured by Wilson's appointment as Secretary in 1951. Treasury annexed the economic domain (contesting some parts of it successively with the Departments of Prime Minister and Cabinet, Commerce and Agriculture, and Trade). The Bureau's fusion of statistical and economic advisory roles embodied most notably in Giblin and Wilson was irrevocably terminated with Wilson's departure and Treasury's rapid recruitment of a team of economists.[138]

When the Commonwealth decided the time was ripe to re-open negotiations towards integration of State and federal statistical bureaus, they were to find themselves embracing what one official was subsequently to describe as 'generally depleted statistical capacities'. In a personal letter to the Western Australian Under Treasurer, Carver noted in September 1953 that 'at least three of the States, without recognising it, have been abandoning their statistical organisations and automatically throwing more and more on to us to do in Canberra'. Nevertheless, Carver was hopeful because 'statistical coordination has come actively to life in both Brisbane and Melbourne, where joint premises and other joint arrangements contingent on the Census are being made'. Meanwhile, in Canberra, the Public Service Board had 'provided career jobs which will now enable us to continue the development of Australian statistics towards the levels attained in the United Kingdom, Canada and the United States'. One of the key jobs created was that of Assistant Statistician (Administrative), a position specially approved in 1949 to regularise Wilson's refusal to allow Archer to take up a promotion in the Department of Health.[139]

With the encouragement of Archer and O'Neill, a frustrated H.P. Brown produced for Carver early in 1950 a list of the Bureau's 'general deficiencies', and 'specific items' which required action. Brown found fault with unco-ordinated publication policy, 'inadequate thinking' about 'general statistical policy' as well as a lack of experimental work on questionnaires, insufficient attention to seasonal variations in monthly collections, and the narrowness of the range of monthly statistics. Delays in compilation and publication, and the 'very summary fashion' in which the inquiries of private persons were dealt with were linked directly with staff shortages, as, by implication, were 60 neglected categories of statistics. Remedying all of the inadequacies nominated by Brown was beyond the resources of even a rapidly growing organisation. But significant progress was made in some important areas. With D.V. Youngman, Brown himself had already pioneered social accounting and had developed sampling techniques for business surveys. Further important analytical work was done on national accounts during the 1950s, but greater emphasis was placed on compiling statistics. In 1950, quarterly surveys of retail establishments began, complementing a Census taken in 1948 and 1949 after strong requests from the business sector. A survey of wage and salary taxpayers introduced in 1952 resulted in a saving of 80 staff who had previously compiled taxation statistics by complete enumeration. The creation in 1953 of a sampling section under I.G.Jones in the Development Branch saw the new techniques established, although a sceptical Carver was tempted to discontinue all sampling operations when the 1954 Census of retail establishments could not at first be reconciled with the surveys for the corresponding quarters. From the mid-1950s onwards, in spite of resistance from some informants who queried the Statistician's authority to use sampling techniques, sample surveys embraced some elements of monthly production, wool clip estimates, stocks, capital expenditure, local government employment, company tax and award occupations, as well as special assignments for the Reserve Bank and various government departments, town planning authorities, and academic institutions. Developmental work on a household expenditure survey was undertaken by Dr F.B. Horner and G.R. Palmer but the dispersal of senior staff to State offices (and the beginning in 1958 of studies related to the introduction of computers) led to the suspension of household expenditure work and other new projects. Meanwhile, however, E.K. Foreman prepared the groundwork for a labour force survey and the extension of sampling into census quality control. Foreman became the driving force behind a core sampling organisation that progressively, and not without friction with some other 'line' managers, undertook responsibility for innovation in a variety of applications of mathematical statistics.[140]

UNIFICATION AND A NEW WORLD

It fell to Archer, at Carver's behest, to usher in the era of the computer. A sympathetic response from Roland Wilson and Lenox Hewitt of the Treasury ensured that funds were available for the purchase of computers (a Control Data 3600 in Canberra and satellite CD 3200s in State capital offices), the programming staff having been recruited from Britain in 1962. Archer and Dr John Ovenstone, a Weapons Research Establishment and subsequently Defence Department expert, had been entrusted by a 'quite terrified' Carver with defining the Bureau's needs and overseeing the installation. The new world which the Bureau was attempting to cope with using advanced techniques and vastly enhanced computational power, was described some years later in a memorandum arguing the case for major statutory changes:

> The pressures which were being exerted on the Commonwealth Bureau during the post-War years reflected not only the increase in the volume of statistics being sought, but also a fundamental change in the manner in which official statistics were being used. Whereas in pre-War years, statistics were used primarily as a measure of past performance, since the War they have been used increasingly as a means of evaluating current trends and as a basis for anticipating future economic trends for planning, both in Government and in private industry.[141]

The management problems of the 1960s and beyond were to be problems of an expanding organisation, still conscious of a mis-match between resources and commitments, where overlapping, duplication, lack of co-ordination, and excessive subject-matter specialisation are endemic. With 3,100 staff by 1969 and 2,000 publications (550 titles) released each year, it was an organisation whose work could be strategically directed but no longer given the degree of personal oversight to which Carver had aspired.[142] As the scope of activities widened, Bureau officers in the State capitals found themselves responding to media inquiries on 'sensitive areas of public opinion (income, expenditure patterns, pension sources, types of illness or infirmity)'.[143] As academic, business, and government researchers widened the ambit of their concerns, anxieties about the erosion of privacy were more frequently expressed in Parliament and the community. While economic statistics remained central to the Bureau's mission—and were radically enhanced by the introduction in 1969 of an integrated census of mining, manufacturing, electricity, gas, wholesale and retail trade, and certain services—there was a growing emphasis on social statistics. Statistics of household expenditure and the use of motor vehicles had acknowledged policy relevance. In line with overseas practice, seasonal adjustment of a wide range of series became accepted procedure; input-output tables and econometric models were produced; and attention was even turned to the long resisted but pressingly demanded indexes of production and productivity.[144]

While the Bureau's leading officers were anything but complacent, particularly as other federal departments developed independent and sometimes incompatible data systems, they had rightfully recognised that the achievement of unification agreements with all States laid the essential foundation for a re-invigorated and extended national statistical enterprise. Negotiations towards an integrated statistical service were re-opened by the Commonwealth in 1953. Discussions with Victoria were promising but inconclusive. The Queensland Labor Government decided to 'retain its own Statistical office to meet all State Governmental, Local Authority and State Industrial requirements'—a stance that was promptly reversed by the Country Party-Liberal Party coalition in 1957.[145] But all States consented to a transitional step of housing their statistical officers in the same premises as Commonwealth officers. Even this move was delayed, as Carver explained to Wilson, by 'the messing about of various Commonwealth intrumentalities, even involving the fundamental question as to whether a State Statistical office could be housed in the Commonwealth space'. Carver proceeded cautiously until mid-1953, feeling that he was 'a bit out of step' with Wilson with whom he had had insufficient opportunity to confer. But having been assured that he was not 'running contra' to Wilson's views, he proceeded 'actively but guardedly with suasion' to the point of having the Treasurer ready by October 1953 to recommend a simple amendment to the Census and Statistics Act to facilitate the negotiation of agreements with individual States. It was to take another three years, however, before legislation was in place.

K. M. Archer

J. P. O'Neill

By early August 1954, Carver had distilled his thinking about unification into eleven 'principles' which he discussed first privately with well placed public servants in New South Wales, South Australia and Western Australia. A draft agreement on integration, with special reference to Western Australia, was prepared by the Crown Solicitor in January 1955. The following month, Carver advised the Chairman of the New South Wales Public Service Board that an enabling Bill and a draft or staff reorganisation were also ready.[146] Agreement in principle with the governments of Western Australia, New South Wales, and South Australia proved less difficult than had been feared. The draft agreement with Western Australia became the prototype of arrangements to be made with each State following enactment of the Statistics (Arrangements with States) Bill, authority for which was finally sought from the Cabinet by Arthur Fadden in February 1956. Fadden advised Cabinet that the proposed arrangements entailed the creation of:

> an integrated statistical service operated by Commonwealth officers under the immediate direction of each State of a Statistician who would hold office under both the Commonwealth and the State . . .
> No State would be required to surrender its sovereign powers in the field of statistics. It would agree to exercise them in a special way through an integrated service.[147]

In a series of agreements, beginning with South Australia in March 1957 and ending with Victoria in June 1958, the vision that had fired a succession of statisticians from Coghlan to Carver at last became a reality. Of all the benefits predicted to flow from integration, one of immeasurable practical and symbolic significance was identified by the compiler of 'Preliminary Notes on the Provisional Agenda' for the 1958 Statisticians' Conference: 'The Central Bureau can now, for the first time in history, make a firm printing timetable with the Commonwealth Printer.'[148]

R. W. Cole

R. J. Cameron

While the completion of unification was Carver's greatest achievement, he also influenced the future course of the Bureau by his nurturing of the careers of Keith Archer and Jack O'Neill. Archer had been made responsible for 'the main statistical work and general administration of the office' under Carver.[149] He was created Deputy Commonwealth Statistician in 1958 and regularly acted for Carver when the Statistician was absent. He succeeded Carver in February 1962. O'Neill, Archer's close colleague for three decades, followed him as Deputy and ultimately as Statistician in 1972. With the departure of O'Neill in 1975, a half century of continuity was ended. The re-christening of the organisation as the Australian Bureau of Statistics, its statutory autonomy, the appointment of its head from outside, and its headquarters consolidation in concrete isolation eight kilometres from the centre of Canberra at Belconnen, all heralded a new era that awaits its historians.

NOTES

[1] 'Report on the Proposed Establishment of a Central Bureau of Statistics', T. A. Coghlan to Sir William Lyne, 21 April 1903, Sir Edmund Barton MSS, NLA 51/1/1112–14.

[2] E. C. Fry, 'T. A. Coghlan as an Historian', paper presented to Section E, ANZAAS Congress, Aug. 1965, p. 9.

[3] National Australasian Convention, Sydney, 1891, *Votes and Proceedings,* p. clxxvi; John Quick and Robert Garran, *Annotated Constitution of the Australian Commonwealth,* Sydney, 1901, p. 572.

[4] *Census of Australasia 1901,* Conference of Statisticians' Report, Legislative Assembly, New South Wales, 1900, p. 1.

[5] ibid., p. 3.

[6] Correspondence Register, Department of Home Affairs, AA A100.

[7] Conference of Statisticians, Hobart, Jan. 1902, *Parliament of Tasmania,* No. 25, 1902, Appendix III, pp. 32–3.

[8] ibid., p. 33.

[9] ibid., p. 7.

[10] *Unification of Australasian Statistical Methods* and Co-ordination of the Work of the Commonwealth and State Bureaux, Conference of Statisticians of the Commonwealth and States of Australia and Colony of New Zealand, Melbourne, 1906, p. 24.

[11] *Conference of Statisticians . . .* 1902, pp. 8–9.

[12] Sir Edmund Barton's Diary, 6 March 1903, Barton MSS, NLA 51/2/951; Coghlan to Lyne, 21 April 1903, Barton MSS, NLA 51/1/1118–25.

[13] Joan M. Cordell, *T. A. Coghlan* Government Statist of New South Wales 1888–1905, unpublished ts., n.d., p. 99; Commonwealth Statistician and Actuary to Secretary, Department of Home Affairs, 8 Feb. 1930, AA A571, 32/2037, refers to Johnston's letter.

[14] Cordell, p. 119. For Coghlan's work on the organisation of export and import statistics see his correspondence with the Commonwealth Treasurer, Sir George Turner, Nov.–Dec. 1904, AA A571, 05/3601.

[15] Cordell, p. 100; Coghlan to W. McLeod, 11 April 1906, Cordell p. 101; and letters to Deakin urging that the Commonwealth take over the work of the state agents general, 6 Sept. and 27 Oct. 1905, Alfred Deakin MSS, NLA 1540/15/2430, 2446.

[16] 'Appointment of Commonwealth Statistician', Department of Home Affairs office memorandum, 12 Feb. 1906; Prime Minister (Deakin) to Premier of New South Wales (Carruthers), 6 Feb. 1906, AA A100, 1906/1258; Coghlan to Deakin, 15 Feb. 1906, Deakin MSS, NLA 1540/1/1334. For an interpretation showing Carruthers in a 'bad light' see D. I. Wright, *Shadow of Dispute,* Aspects of Commonwealth–State Relations, 1901–1910, Canberra, 1970, pp. 78–9; cf David Carment, *Australian Liberal: A Political Biography of Sir Littleton Groom* 1867–1936, Ph.D. Thesis, A.N.U., 1975, pp. 46–9.

[17] Secretary, Department of Home Affairs for Minister for Home Affairs, 21 Dec. 1905; T. T. Ewing to L. E. Groom, 27 Dec. 1905; Secretary, Department of Home Affairs to Minister, 12 Jan. 1906, Sir Littleton Groom MSS, NLA 236/1/398, 403, 413; Coghlan to Deakin, 28 Dec. 1905, Deakin MSS, NLA 1540/1/1280–2; *Commonwealth Gazette* 24 Feb. 1906, p. 150; *Nation Building in Australia* The Life and Work of Sir Littleton Ernest Groom, Sydney, 1941, pp. 44–5, 50–1, 118.

[18] *Report of the Proceedings of the Conference between the Commonwealth and State Ministers,* Hobart, 1905, pp. 87, 90.

[19] *Commonwealth of Australia Parliamentary Debates* (CPD), vol. XXXII, House of Representatives, 23 Aug. 1905, pp. 1384–5.

[20] The secrecy provisions inadvertently inhibited State statisticians from using information obtained under the Commonwealth Act for State purposes until a regulation remedied the unintended consequence in 1909. (ABS 06/200.) Four Tasmanian businessmen earned the distinction of being the first people to be prosecuted for failure to furnish information. Convictions were recorded and more serious penalties threatened for future delinquents (*The Mercury,* 16 June 1910, ABS Box R8 903/09.) It was not until 1935 that all States had legislative authority for their own statistical collection: Tasmania (*Statistical Returns Act 1877*); Queensland (*Statistical Returns Act 1896*); New South Wales (*Census Act 1901*); Western Australia (*Statistics Act 1907*); Victoria (*Statistics Act 1928*); South Australia (*Statistics Act 1935*). An amending Act in 1920 explicitly empowered the Statistician to publish census results and abstracts 'as the Minister directs, with observations theron'.

[21] CS (C. H. Wickens) to Secretary, Department of Home Affairs, 8 Feb. 1930, AA A571, 32/2037; Coghlan to Deakin, 28 Dec. 1905, Deakin MSS, NLA 1540/1/1280–2.

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[22] Cordell, p. 112; Susan Bambrick, 'The First Commonwealth Statistician: Sir George Knibbs', *Journal and Proceedings*, Royal Society of New South Wales, vol. 102, 1969, pp. 127, 132–3. Knibbs' appointment as Acting Professor of Physics at Sydney University is mentioned in various obituaries but there is no official record of it at the university.

[23] Lyne to Groom, 11 May 1906, Groom MSS, NLA 236/1/449. When more prominent statisticians like Victoria's William McLean and Coghlan's deputy and successor, J. B. Trivett, had recently been subjected to public dissection of their methods and social philosophies in the inquiries of the Mackellar Commision into the birth rate, the advantage of having nothing known against him was a considerable assest to Knibbs. (Neville Hicks, *'This Sin and Scandal'*: Australia's Population Debate 1891–1911, Canberra, 1978, ch. 7; W. D. Borrie, *Population Trends and Policies*: A Study in Australian and World Demography, Sydney, 1948, Ch. IV.) Fortuitously, Knibbs was on the platform with Deakin, Groom and the Labor leader, J. C. Watson, at the launching of the Immigration League of Australia in October 1905. (Michael Roe, *Nine Australian Progressives*: Vitalism in Bourgeois Social Thought 1890–1960, St Lucia, 1984, p. 162.)

[24] Coghlan to D. C. McLachlan, 29 June 1906, Cordell, p. 102.

[25] Coghlan to Deakin, 29 June 1906, Deakin MSS, NLA 1540/1/1449.

[26] Coghlan to Ewing, 26 Oct. 1906, Cordell, p. 102.

[27] J. Stonham to Secretary of the Treasury, 3 May 1933, ABS 57/1530.

[28] George Handley Knibbs, 'The History and Development of the Statistical System of Australia', in John Koren (ed.), *The History of Statistics*, Their Development and Progress in Many Countries . . . , New York, 1918, p. 60; Commonwealth Bureau of Census and Statistics (CBCS), *Official Year Book of the Commonwealth of Australia* . . ., No. 1, 1908, Melbourne, 1908, p. 12.

[29] *Conference of Statisticians* . . . 1906, p. 4.

[30] ABS 140/08.

[31] *Conference of Statisticians* . . . 1906, pp. 15–17,8.

[32] ibid., p. 6. For the shrewd observations and suggestions of an experienced South Australian mounted police constable, see Leo Dingle to Government Statist, 19 June 1922, ABS (Adelaide), 141/1916.

[33] ibid., pp. 7.23; Knibbs argued vigorously for quinquennial enumeration in a memoradum to the Secretary, Department of Home Affairs, 1 Feb. 1907, AA A100, 7/861.

[34] ibid., pp. 12–13; Ian vanden Driesen, 'Demographic Grumbles: Some Problems with Population Data in Western Australia 1850–1900', *Australian Historical Statistics*, No. 6, Jan. 1983, p. 23.

[35] *Conference of Statisticians* . . . 1906, pp. 20–1, 6.

[36] G. H. Knibbs, *Local Government in Australia*, Melbourne, 1919, preface; for an early attempt to minimise 'unwarrantable and misleading' divergences in defining metropolitan areas, see CS (Knibbs) to South Australian Government Statist, 21 June 1911, ABS (Adelaide), 91/1911.

[37] *Conference of Statisticians* . . . 1906, pp. 20–1.

[38] ibid., p. 21; CBCS, *Year Book* 1917, p. 197.

[39] Coghlan to Deakin, 10 July 1905, Cordell, p. 41; Coghlan to Deakin, 20 July 1906, CS (Knibbs) to Secretary, Department of Home Affairs, 12 July 1907, AA A100, 07/4753; CPD, vol. XLV, House of Representatives, 31 March 1908, p. 9875. Knibbs was also riled by the unauthorised description of Coghlan in *Who's Who in Australia 1907* as 'Statistician to the Federal Government since 1906' (CS [Knibbs] to Secretary, Department of Home Affairs, 5 Feb. 1907, AA A100, 7/938.)

[40] CS (Knibbs) to Secretary, Department of Home Affairs, 21 March 1908, ABS 45/26.

[41] Memo by CS (Knibbs), 24 March 1908, ABS 45/26; *CPD*, vol. XLIV, Senate, 24 March 1908, p. 9422; in a memorandum to the Secretary, Department of Home Affairs on 15 Jan. 1907, Knibbs had foreshadowed the annual publication of a 1,500 page Commonwealth statistical register and a quinquennial 1,500 page 'Statistical Account of the Development of the Commonwealth of Australia' as well as the *Year Book*. (AA A100, 07/666.)

[42] CS (Knibbs) to Secretary, Department of Home Affairs, 21 Oct. 1907; 9 April 1908 (approved by Minister, 23 April 1908), ABS 45/26.

[43] ABS 45/26.

[44] CS (Knibbs) to Secretary, Department of Home Affairs, 4 March 1908, ABS 45/26; L. H. Sholl, the South Australian Government Statist, was particularly dismayed by his State's inability to collect and publish production statistics as promptly as Victoria and New South Wales (Government Statist, South Australia to Victorian and New South Wales Government Statists, 21 June 1911, and replies 12 July 1911 and 28 June 1911, ABS, Adelaide, 95/1911).

[45] CS (Knibbs) to Secretary, Department of Home Affairs, 5 Nov. 1908, minuted by Hugh Mahon, 18 Nov. 1908, ABS 45/26.

[46] CS (Knibbs) to Secretary, Department of Home Affairs, 9 May 1908, ABS 45/26. The similarity between some sections of the *Year Book* and corresponding portions of earlier works by Coghlan gave a particular piquancy to the denigration of Knibbs' prose style. Mr B. D. Haig kindly drew my attention to some parallel passages in the works of Coghlan and the *Year Book*.

[47] Coghlan to N. C. Lockyer, 8 Jan. 1909, Cordell, p. 48.

[48] Coghlan to Deakin, n.d. (ca Oct. 1908), Deakin MSS, NLA 1540/1/2126; Coghlan to MacLachlan, 19 March 1909, Cordell, p. 48.

[49] *Year Book* 1908, pp. 760–1, 767, 516–22.

[50] ibid., p. 7.

[51] G. H. Knibbs, *The Problems of Statistics*, Brisbane, 1910, passim. For an assessment of Knibbs' social and economic thinking see Craufurd D. W. Goodwin, *Economic Enquiry in Australia*, Durham N. C., 1966, pp 261–2, 349–50, 448–52, 487–91.

[52] Hughes to Mahon, 15 April 1909, Mahon MSS, NLA 937/129.

[53] Coghlan to Lockyer, 18 March 1908; to Macleod, 21 Oct. 1910, Cordell, pp. 103, 102; Coghlan to Deakin, 25 March 1909, Deakin MSS, NLA 1540/1/2336.

[54] AA A100, 07/5356; Groom's opinion, 5 Aug. 1907, is published in Patrick Brazil and Bevan Mitchell (eds), *Opinions of the Attorneys-General of the Commonwealth of Australia*, with opinions of Solicitors-General and the Attorney-General's Department, vol. 1, 1901–14, A.G.P.S., Canberra, 1981, pp. 345–6; cf Robert Garran's comment, 11 Aug. 1908, in Brazil and Mitchell (eds), p. 402.

[55] CS (Knibbs) to Secretary, Department of Home Affairs, 26 Nov. 1909; Prime Minister to Premier of Western Australia, 20 Nov. 1908, ABS 06/200; CS (Knibbs) to Secretary, Department of Home Affairs, 5 Jan. 1909, ABS Box R24, 140/08; CS (Knibbs) to Secretary, Department of Home Affairs, 16 Dec. 1909, ABS 200/06. The limits on Knibbs' authority were clearly illustrated by his failure to persuade Queensland and New South Wales to continue the costly compilation of the particulars relating to 'distinct persons' convicted at magistrates' courts which facilitated comparisons of data on lower and higher courts. (CS to Government Statistician, Queensland, 3 Nov. 1910, ABS Box R15, 200/06; cf Satyanshu K. Mukherjee et al., *Crime Trends in Twentieth Century Australia*, Sydney, 1981, pp. 13–15.)

[56] F. B. Horner, 'The Evolution of the Census', Address given to the N.S.W. branch of the Economic Society of Australia and New Zealand, 23 April 1954, p. 11; David Tait, 'Respectability, Property and Fertility: The Development of Official Statistics about Families in Australia', *Labour History*, No. 49, Nov. 1985, p. 92; G. H. Knibbs, *The First Commonwealth Census, 3 April 1911, Notes*, Bureau of Census and Statistics, Melbourne, 1911; in Koren (ed.), *The History of Statistics*, p. 64, Knibbs spoke of the Census team as consisting of 400 enumerators, 7,000 collectors, a maximum of 280 tabulators, and an expenditure of £170,000. British developments are noted in Richard Lawton (ed.), *The Census and Social Structure*: An Interpretative Guide to Nineteenth Century Censuses for England and Wales, London, 1978, p. 20.

[57] A. Adrian, 'Trends in Social Statistics: The Australian Census 1911–1981', Working Paper No. C10, 1981 Census of Population and Housing, Development Programme, ABS Canberra, [1982], pp. 3–4, 5–9; ABS evaluation of the 1976 Census race question indicated that 'the quality of the data is suspect'. (Brian Doyle and Raymond Chambers, 'Census Evaluation in Australia', Working Paper No. C4, 1981 Census of Population and Housing, Development Programme, ABS, Canberra, [1980], Appendix 2.) On the deaf-mute problem, see H. O. Lancaster, *An Introduction to Medical Statistics*, New York, 1975, pp. 1–4.

[58] Press cuttings, Dec. 1910 to July 1911, ABS (Adelaide), 161/1909; CS (Knibbs) to South Australian Government Statist, 13 May 1912, ABS (Adelaide), 96/1912; *Conference of Statisticians of the States of Australia*, Sydney, March 1912, pp. 17, 8, 10, 13. Within weeks of the conference the Commonwealth had moved to arrange for daily reports on interstate rail migration to be supplied by railway officers at border towns. (Minister for Home Affairs, Schedule No. 8, 30 April 1912, AA A742.)

[59] *Year Book* 1912, pp. 1167-84; G. H. Knibbs, *Inquiry into the Cost of Living in Australia 1910–11*, CBCS, Melbourne, Dec. 1911; G. H. Knibbs, *Expenditure on Living in the Commonwealth, November 1913*, Labour and Industrial Branch Report No. 4, CBCS, Melbourne, Aug. 1914.

[60] G. H. Knibbs, *Social Insurance*, Report by the Commonwealth Statistician . . . , CBCS, Melbourne, Sept. 1910, pp. 83, 92.

[61] An undated draft 'Labour and Statistics Department Bill', Regulations, and Explanatory Memorandum are in King O'Malley MSS, NLA 460/3046–58.

[62] Minister for Home Affairs to Secretary, Department of Home Affairs, 13 March 1911, 24 Jan. 1911, 13 Feb. 1911, (copies), O'Malley MSS, NLA 460/40–3, 1, 25–8.

[63] Minute by Minister for Home Affairs, 24 March 1911, (copy); CS (Knibbs) to Minister for Home Affairs, 30 Sept. 1912, O'Malley MSS, NLA 460/44, 3059–60. It was not until 1975 that the Commonwealth Statistician had the full powers of a departmental head.

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[64] *Year Book* 1913, pp. 1123–55; CPD, vol. LXII, House of Representatives, 24 November 1911, p. 3165; C. Forster, 'Australian Unemployment, 1900–1940', *The Economic Record*, vol. 41, no. 95, Sept. 1965, pp. 426–50 and 'Indexation and the Commonwealth Basic Wage 1907–22', *Australian Economic History Review*, vol. XX, no. 2, Sept. 1980, pp. 99–118; the early development of the Labour and Industrial Branch can be traced in 'schedules' of current work circulated to parliamentarians by King O'Malley, Oct. 1911 to May 1913 (AA A742).

[65] Knibbs in Koren (ed.), *The History of Statistics*, pp. 65–8. By December 1912, Wickens had accumulated 54 days untaken leave 'through pressure of exceptional official duties'. (Wickens to CS, 30 Dec. 1912, ABS W/65.)

[66] CS (Knibbs) to Minister for Home Affairs, 2 Nov. 1916, annotated by O'Malley, 6 Nov. 1916, ABS W/65. In answer to a question on notice, the Senate had been told on 14 September 1916 that there were 24 permanent staff and 28 temporaries employed on the usual work of the Bureau, with an additional 107 temporary staff on war census work. (CPD, vol. LXXXIX, Senate, 14 Sept. 1916, p. 8534).

[67] CS (Knibbs) to South Australian Government Statist, 4 Sept. 1914; New South Wales Government Statistician to CS, 1 Oct. 1914, (copy); R. M. Johnston to G. H. Knibbs, 23 Sept. 1914, (copy), ABS (Adelaide), 159/1914; Memorandum, Government Statist to Chief Secretary, 26 July 1916, ABS (Adelaide), 144/1916; South Australian Government Statist to CS (Knibbs), 13 July and 18 Aug. 1916; CS (Knibbs) to Government Statist, 17 July and 22 Aug. 1916, ABS (Adelaide), 136/1916. As early as 24 Sept. 1908, Knibbs had commented that production statistics could be improved and issued earlier if the State bureaus 'were relieved of effort in connection with Vital Statistics'. (ABS Box 24, 140/08.)

[68] G. F. Pearce to Premier, South Australia, 3 June 1916; 'Report Upon the Work of the State Statistical Department and the Proposal for Transfer to the Commonwealth Government'. Government Statist, 30 June 1916, ABS (Adelaide), 118/1916 (CPD, vol. XCIV, Senate, 24 Nov. 1920, p. 6871).

[69] R. M. Johnston to Premier, 17 July 1916, (Tasmanian Premier's Department 1.269) quoted in D. N. Allen, *The Development of Official Statistics in Tasmania*, Diploma of Public Administration thesis, University of Tasmania, 1965, p. 81.

[70] 'Report . . . 30 June 1916', ABS (Adelaide), 118/1916; the Registration of Births, Deaths, and Marriages Department was amalgamated with the Statistics Department in 1928, bringing South Australia into harmony with Victoria, Queensland, and Western Australia, with Tasmania and New South Wales the exceptions. (CS [Wickens] to Secretary Department of Home Affairs, 8 Feb. 1930, AA A571, 32/2037.)

[71] *The Age* 13 Dec. 1916. As a war economy, Victoria had ceased publishing its Statistical Register, shortened its *Year Book*, and reduced the print run. (Unsigned and undated memorandum ca 1920, ABS Melbourne; Erle Bourke, *Victorian Year Book 1986*, Melbourne, 1986, pp. 18–19.)

[72] CS (Wickens) to Secretary, Department of Home Affairs, 8 Feb. 1930, AA A571; Johnston to Knibbs, 23 Sept. 1914, (copy), ABS (Adelaide), 159/1914.

[73] G. H. Knibbs, *The Private Wealth of Australia and its Growth as ascertained by various methods, together with A Report of The War Census of 1915*, CBCS, Melbourne, 1918, pp. 8–13, 19; Knibbs to G. Pitt-Rivers, 17 March 1921, (copy), AA A1606, B5/1 Part 3.

[74] ibid., pp. 36–7; Government Statist, South Australia to CS (Knibbs), 8 Sept. 1915, ABS (Adelaide), 129/1915; Colin Clark and J. G. Crawford, *The National Income of Australia*, Sydney, 1938, p. 7; L. Soltow, 'The Censuses of Wealth of Men in Australia in 1915 and in the United States in 1860 and 1870', *Australian Economic History Review*, vol. XII, no. 2, Sept. 1972, pp. 125–6; F. Lancaster Jones, 'The Changing Shape of the Australian Income Distribution, 1914–15, and 1968–69', *Australian Economic History Review*, vol. XV, no. 1, March 1975, pp. 21–34. Understatement was also evident in responses to the voluntary questions on income in the 1933 Census. (Clark and Crawford op. cit., pp. 7–22.)

[75] Knibbs, *Private Wealth*, p. 178.

[76] Knibbs to Stonham, 23 Dec. 1919, ABS 26 19/579. Knibbs had admitted to an inquirer in 1919 that not all information about the sources of personal income had been tabulated at the war census. (CPD, vol. XCL, House of Representatives, 4 March 1920, p. 201.)

[77] CPD, vol. XCIV, House of Representatives, 6 Oct. 1920, p. 5364; Knibbs to Sholl, 29 Jan. 1915, ABS (Adelaide) 23/1914.

[78] CS (Knibbs') to Minister for Home and Territories, 25 Feb. 1918, AA A461, D320/1/3; ABS R12 18/169. Knibbs' comprehensive treatment of the proposed imperial bureau, including a floor plan for the offices and library, suggests a personal as well as an official interest in the outcome. While in London, Knibbs pointed out that the British had no central bureau of statistics. The Commonwealth government was unenthusiastic about committing funds to an organisation that might necessarily have to undertake tasks more properly the responsibility of the British alone. With the British themselves bent on economy the scheme languished. (R. R. Garran to Prime Minister, 25 Jan. 1924, AA A461, D320/1/3.)

[79] Knibbs to Stonham, 23 Dec. 1919, ABS 26 19/579.

[80] G. H. Knibbs, 'Statistics and National Destiny', *United Empire*, vol. XI (New Series), No. 1, Jan. 1920, pp. 14–25; 'The Problems of Population, Food Supply and Migration', *Scientia*, vol. XXVI, Dec. 1919, pp. 485–95.

[81] Fraser to Knibbs, 9 May 1919, ABS 26 19/579.

[82] Secretary, Home and Territories Department to CS (Knibbs), 28 July 1919; CS (Knibbs) to Secretary, Home and Territories Department, 23 July 1919 (copy), ABS R26 19/579. Wickens had not been one of Knibbs' original choices for the Bureau but had successfully applied when his more senior Perth colleague W. Siebenhaar had declined an offer of appointment. (C. F. Wilson, Colonial Treasurer, to CS [Knibbs], telegram, 24 Oct. 1906, ABS 53/06.)

[83] J. G. McLaren (Secretary, Home and Territories Department) to Knibbs, 19 May 1921, CSIRO Archives 1/175 Pt 1; H. O. Lancaster, 'Charles Henry Wickens 1872–1939', *Australian Journal of Statistics*, vol. 16, no. 2, 1974, pp. 71–82 for Wickens' life and an assessment of his contributions to demography and vital statistics in particular. Sir Roland Wilson, recalling a view expressed in the Bureau in the early 1930s, credits Wickens with authorship of *The Mathematical Theory of Population*, the major work published over Knibbs' name. Wickens himself, in an obituary of Knibbs, described the study as Knibbs' 'most ambitious effort'. Professor C. C. Heyde concludes from a study of this and earlier works that Wickens would have had a claim to recognition as co-author (private communication, 15 Feb. 1988). ('An address by Sir Roland Wilson to mark the 50th anniversary of his appointment as Commonwealth Statistician', ABS, Canberra, 29 April 1986, pp. 1–2; C. H. Wickens, 'Sir George Knibbs'. *The Economic Record*, vol. v, no. 9, Nov. 1929, p. 335.) George Pearce saw the deaths of several State officials as affording 'a splendid opportunity' for reform. (CPD, XCIV, Senate, 24 Nov. 1920, p. 6871.) W. L. Johnston to Wickens, 22 Oct. 1923, ABS 08/140.

[84] CS (Wickens) to Secretary, Home and Territories Department, 9 Aug. 1922, AA A571, 32/2030; CS (Knibbs) to Secretary, Department of Home Affairs, 18 March 1911, (copy), ABS Box W165 53/06. Barford, who was to be principal assistant to Stonham, also found himself reclassified from professional to clerical.

[85] *Year Book* 1922, pp. 1084–5. The machine tabulation saga is documented in AA A571, 32/2034–5. In the mid 1920s, the New South Wales and Victorian bureaus were each using two Powers Automatic Key Punches and a Powers Automatic Counting Sorter which could sort about 18,000 cards an hour. (ABS, Adelaide, 49/1926.)

[86] 'Extract from Report of Conference between Prime Minister, State Premiers and Ministers . . . Melbourne, May, 1923', ABS (Melbourne); *Conference of Statisticians, Melbourne 2/10/'23 to 5/10/'23*, typescript report to Prime Minister and Premiers, 5 Oct. 1923; Giblin to Wickens 12 March and 4 April 1924. ABS 08/140.

[87] CS (Wickens) to Secretary, Home and Territories Department, 10 Sept. 1924, ABS 08/140. Correspondence, memoranda, and copies of legislation relating to the takeover of the Tasmanian operation are in AA A571, 32/2028, ABS 08/140 and 39/1/1. (The property transferred to the Commonwealth by the Tasmanian Act included three revolving chairs, five mats, a waste paper basket, three Fuller slide rules, and an arithmometer. The South Australian Bureau's copy of the Act has a marginal query about the last two items: 'What are these? Wd they help the office'. [ABS, Adelaide 215/1924].)

[88] Giblin to CS (Wickens), 18 March 1927 (copy), and subsequent exchanges with the Public Service Board, AA A571, 32/2041. K. A. Archer, Commonwealth Statistician 1962–70, was paid personally by Giblin for his first nine months in the Hobart office until his appointment was formalised retrospectively when Giblin's friend, Lyons, became Premier in 1924. As the other juniors were 'town-bred', Archer's farming background led to his assignment to understudy the 63 year old J. R. Green on 'stock and crop' statistics (NLA, TRC C12/38). J. P. O'Neill was another Commonwealth Statistician to benefit from Giblin's guidance and support in obtaining a free place for university study in 1929 (ABS 30/57). In his enthusiasm for youth, Giblin apparently did not sense the frustration of his principal assistant. In a protest over his treatment since 1924, the 64 year old W. T. Murphy obliquely indicated a suspicion that neither merit nor age was the crucial factor. 'I understand that the laws of Italy now provide that no member of the Public Service shall be at the same time a member of any Secret Society. Such a law cannot possibly be an injustice to any one; and would, undoubtedly, have the effect of considerable saving to the taxpayers, of greater efficiency in the Service, and of inspiring confidence in the administration.' (W. T. Murphy to Chairman, Public Service Board of Commissioners, 6 Jan. 1929, ABS 30/57.)

[89] CS (Wickens) to Tasmanian Government Statistician, 10 April 1924, ABS 08/140; CS (Wickens) to Assistant Secretary, Department of Home Affairs, 24 Oct. 1924; J. Stonham et al to CS (Wickens) 16 Sept. 1929, and subsequent correspondence between CS, PSB, and Home Affairs Department, AA A571, 32/2030. In the harsh economic climate of 1929–30, Wickens' advocacy on behalf of his staff, and his request for the creation of a position of Assistant Statistician fell on deaf ears.

[90] CS (Wickens) to Secretary, Department of Home Affairs, 22 Jan. 1930, AA A571, 32/2030.

[91] H. A. Smith, 'Report upon Scheme for Unification of Australian Statistics . . .', 11 May 1923, ABS (Melbourne).

[92] The conferences attended by Wickens were held in Adelaide (1924), Sydney (1925), Perth (1926), Hobart (1928), Canberra (1929), and Brisbane (1930). The agenda usually embraced population and vital statistics, finance, transport and communication, trade and commerce, local government, production,

labour and industrial, with production statistics usually a major item. The 1924 conference, for example, was urged by the Western Australian Statist to review various categories affected by the rapid growth of the automobile industry. 'The fact that motor chassis manufacture has not yet been undertaken in Australia does not preclude the intelligent anticipation of the likelihood of such a possibility.' (Briefing notes for CS [Aug. 1924], Treasury 69/1975.)

[93] The Victorian deliberations are documented in ABS (Melbourne) files. The history of unification efforts from 1906 was summarised in CS (Wickens) to Secretary, Department of Home Affairs, 8 Feb. 1930, AA A571, 32/2037; cf 'Uniformity in Statistics', paper for meeting of Commonwealth and State Ministers, 20 Feb. 1930, AA A571, 30/1011.

[94] Wickens had speculated hopefully on 29 March 1928 that it was 'unlikely that a move will take place at midwinter'. (AA A571, 32/1587 Pt 1); for the proposed move to the Hotel Acton see ABS 30/328.

[95] CS (Wickens) to C. Laverty, 23 June 1928, ABS 45/1486. The Public Service Board had decided in February 1924 that machine tabulation 'is routine work and particularly suitable for the employment of female officers of the Fourth Division with duties embracing coding statistical information, punching cards according to the code, and general routine work of machine tabulation ... in addition to the economy which will be thus effected, it may be anticipated that there will be a gain in efficiency by the establishment of a nucleus of trained staff . . .'. (AA A571, 32/2030.)

[96] CS (Wickens) to Secretary, Home and Territories Department, 29 March 1928, 8 Oct. 1929; Memoranda by Wickens 4 Nov., 2 and 7 Dec. 1929; CS (Wickens) to Minister for Home Affairs, 6 Feb. 1930; CS (Wickens) to Secretary, Department of Home Affairs, 27 June 1930, AA A571, 32/1587 Pt 1. For political background see John Robertson, *J. H. Scullin*, A Political Biography, Perth, 1974, chapters 11-22. For E. G. Theodore's interest in the income question and Wickens' explanation see CS (Wickens) to Secretary, Department of Home Affairs, 14 March 1930; H. J. Sheehan (Assistant Secretary, Treasury) to Minister for Home Affairs, 21 March 1930, AA A571, 32/2046. As the income question was recommended by the statisticians' conference in September 1929 it could not have been, as has been accepted on the authority of the Statistician's Report on the 1933 Census, 'actuated in part . . . by the special interest in the effects upon the pattern of distribution produced by three years of severe depression'. (Adrian, 'Trends in Social Statistics . . .', p. 14; Ian McLean and Sue Richardson, 'More or Less Equal? Australian Income Distribution Since 1933', *The Economic Record*, vol. 62, March 1986, p. 74). On orphans and fertility see *Report, Resolutions, and Agenda of the Conference of Statisticians of Australia* . . . Canberra, 9 to 13 September 1929, Canberra, 1929, pp. 4-5; Adrian, 'Trends in Social Statistics . . .', pp. 12-13. Occupational data are discussed in L. F. Giblin, 'The Census and Occupational Trends', G. V. Portus (ed.), *What the Census Reveals*, Adelaide, 1936, pp. 55-80; Roland Wilson, *Census of the Commonwealth of Australia 30th June 1933, Statistician's Report*, Canberra, 1940, chapters xxii-xxiv. Wilson does not appear to have pursued Giblin's vision of fertility and reproduction rates by occupation.

[97] Parkhill's Cabinet submission, 28 Jan. 1932, AA A571, 32/1587 Pt 1; *Report, Resolutions, and Agenda of the Conference of Statisticians of Australia* . . . Sydney, 10 to 17 August, 1932, Sydney, 1932, p. 10; Acting CS (Giblin) to Secretary Treasury, 30 Sept. 1932, AA A571, 1932/1587 Pt 2. Premier of New South Wales to Prime Minister, 9 March 1932, AA A571, 32/1781; *Report, Resolutions, and Agenda of the Conference of Statisticians of Australia* . . . Brisbane, 22 to 27 May, 1930, Brisbane, 1930, p. 8. The Bureau's declining public commitment to its trade union figures as an indicator of unemployment is charted in Forster, 'Australian Unemployment . . .', pp. 433-46. Cf. J. L. K. Gifford, *Economic Statistics for Australian Arbitration Courts*, Explanation of their Uses, Criticisms of Existing Statistics and Suggestions for their Improvement, Melbourne, 1928, ch. II.

[98] CS (Wickens) to Secretary, Department of Home and Territories, 29 March 1928; Bean to Perkins (Treasury), 26 April 1933, AA A571, 32/1587 Pts 1-3.

[99] For lobbying by the R.S.S.I.L. and the government's response see AA A461, L320/1/1 and M320/1/1. Preference was given to returned soldiers as sub-enumerators, and only ex-soldiers were eligible for appointment to the Canberra temporary clerical staff. The Statistician instructed the Deputy Supervisors of Census to select suitable unemployed persons as collectors. These positions were exempted by order-in-council from the returned soldiers' preference section of the Public Service Act but the Public Service Commissioners still supported the general policy of preference.

[100] ABS 27/646.

[101] On Wickens' health and activities in 1927-31, see ABS W165, 27/646 (trade statistics), 24/873 (world agricultural census), *Royal Commission on the Constitution*, Vol. 1, Minutes of Evidence, Pt III, Melbourne, 1927, pp. 378-81 29/429 (social insurance), T. H. Kewley, *Social Security in Australia 1900-72*, Sydney, 1974, pp. 143-54. In his first discussion on tariffs with Wickens, Giblin and Dyason, Bruce was relieved to discover 'they were equally fogged with myself as to what had actually been the effect from the economic standpoint of Australia's policy of protection', (Bruce to F. L. McDougall, 29 Sept. 1927, quoted in W. H. Richmond, 'S. M. Bruce and Australian Economic Policy 1923-29', *Australian Economic History Review*, vol. XXIII, no. 2, Sept. 1983, p. 251).

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[102] CS (Wickens) to Secretary, Department of Home Affairs, 16 Dec. 1929, AA A571, 32/2030; Minister for Home Affairs to Minister for Defence, 4 Nov. 1931, AA A571, 34/2633; CPD, CXX, Senate, 20 March 1929, pp. 1495–1518; J. Buckley-Moran, 'Australian Science and Industry Between the Wars', *Prometheus*, vol. 5, no. 1, June 1987, pp. 12–13; Acting CS (Giblin) to Secretary, Department of Home Affairs, 24 April 1931, ABS W165; Neville Cain, 'Lyndhurst Falkiner Giblin', in Bede Nairn and Geoffrey Serle (eds), *Australian Dictionary of Biography*, vol. 8: 1891–1939, Cl-Gib, Melbourne, 1981, pp. 646–8.

[103] Wickens to Giblin, (copy), 4 Feb. 1924, ABS 08/140; Notes on agenda, Conference of Statisticians, Perth, Aug. 1926, Treasury 69/1974; Wickens, 'Some of the Problems of Index Numbers', typescript [1929], ABS 19/2; CS (Wickens) to B. Latham (Commonwealth Bank), 18 and 28 Nov. 1930, ABS 30/1357; Neville Cain, 'The Economists and Controversy over Policy in 1930–31', Economic History Joint Seminar paper, A.N.U. 1 May 1987, pp. 5–6, 17–18.

[104] Stonham to Secretary to the Treasury, 3 May 1933, (copy), ABS 57/1530. In 1930 Wickens had crossed swords publicly with Giblin over Tasmania's claim for additional financial allocations from the Commonwealth.

[105] 'An address by Sir Roland Wilson . . .', p. 3; Giblin to (E. M. Giblin), 8 Feb. 1932, L. F. Giblin MSS, NLA 366, Ser. 5, 1–88–CS, (McPhee) to Secretary to the Treasury, 12 April 1933, AA A571, 33/1625. The joint Parliamentary Committee on Public Accounts had recommended in its *Report on the General Question of Tasmania's Disabilities*, the creation of a permanent body to study federal-state financial relations with 'a qualified economist' under the control of the Commonwealth Statistician.

[106] C. B. Schedvin, *Australia and the Great Depression*, Sydney, 1970, ch. IV; Neville Cain, 'Economics Between the Wars: A Tall Poppy as Seedling', *Australian Cultural History*, no. 3, 1984, pp. 74–86; ABS 39/1/1 and 30/1357 for the Queensland Bureau of Economics and Statistics and the Commonwealth Bank. The Queensland Bureau of Economics and Statistics was reconstituted as a Bureau of Industry in late 1932, shorn of one of its original functions of assisting the Industrial Court (B. H. Molesworth, 'The Bureau of Industry in Queensland', *The Economic Record*, vol. ix, no. 16, June 1933, pp. 105–8). For Development and Migration Commission and Royal Commission on National Insurance interest in unemployment, see Colin Forster, 'An Economic Consequence of Mr Justice Higgins', *Australian Economic History Review*, vol. XXV, no. 2, Sept. 1985, pp. 103–9.

[107] Casey to Sheehan, 26 Jan. 1935, (copy), Lord Casey MSS, AA CP503/1 Bundle 3; *The Argus*, 26 Feb. 1936.

[108] D. B. Copland. 'The Economic Society—Its Origin and Constitution', *The Economic Record*, vol. 1, no. 1, Nov. 1925, p. 140; Roland Wilson, 'Australian Capital Imports, 1871–1930', ibid., vol. vii, no.12, May 1931, p. 53 fn 1; 'Australian Monetary Policy Reviewed', ibid., vol. vii, no. 13, Nov. 1931, pp. 195–215.

[109] E. K. Heath and J. Polglaze, 'A Business Index for Australia', *The Economic Record*, vol. ix, no. 17, Dec. 1933, p. 215; F. R. E. Mauldon, *The Use and Abuse of Statistics*, With Special Reference to Australian Economic Statistics, Melbourne, 1933, pp. 21–2. Mauldon, by then Professor of Economics in Tasmania, was appointed Economist and Research Director in the Bureau in 1939 but left two years later. Other economists calling for new approaches to statistics included E. R. Walker and G. L. Wood. *The Economic Record*, vol. XII, no. 2, Dec. 1936, pp. 290–1. For contemporary developments in the United States, see Wilson Gee (ed.), *Research in the Social Sciences*, Its Fundamental Methods and Objectives, New York, 1929; A. Ross Eckler, *The Bureau of the Census*, New York, 1972; Joseph W. Duncan and William C. Shelton, *Revolution in United States Government Statistics 1926–1976*, U.S. Department of Commerce, Washington, 1978.

[110] *The Economic Record*, vol. ix, no. 17, Dec. 1933, p. 297; *Report, Agenda and Resolutions of the Conference of Statisticians of Australia . . .* Canberra, 6 to 8 March 1935, Canberra, 1935; McPhee to H. Leak, 15 Jan. 1935, ABS 34/1195; Wilson to Secretary, Treasury, 2 April 1935, Sir Roland Wilson MSS (ABS); Interview, Sir Roland Wilson, NLA TRC 1612/1. At the 1936 statisticians' conference agreement was reached on extensive revision of the 'C' Series Index and the appointment of six field officers to collect and check retail price and rent data. (*Report and Resolutions of the Conference of Statisticians of Australia . . .* Canberra, 16 April to 22 April, 1936, Canberra, 1936, pp. 4–8; correspondence with Premiers June-July 1936, AA A461, C320/1/2).

[111] 'An address by Sir Roland Wilson . . .', pp. 5–6; Robert S. Parker, *Public Service Recruitment in Australia*, Melbourne, 1942, pp. 109–10; Wilson Interview . . ., NLA TRC 1612/1. Under the previous librarian, Wilson recalled, 'if you wanted a book . . . you had to tell him what size it was, how thick, what colour the binding was, then he'd bring you three or four to pick from!'.

[112] Wilson to Casey, 6 Dec. 1935, (copy); Casey to Wilson, 13 Aug. 1935, Wilson MSS (ABS). Wilson's promotion to Economic Adviser was accelerated by Casey's intervention on learning that Wilson was contemplating an invitation to become Professor of Economics at the University of Tasmania. (W. J. Hudson, *Casey*, Melbourne 1986, p. 99.) Schedvin (*Australia and the Great Depression*, p. 316) dismisses Casey as energetic but uninspired in his successive Treasury positions; but see for example Casey's analysis of Australia's balance of payments position utilising Wilson's figures in a letter to S. M. Bruce, 19 Oct. 1936 (AA A1963/391/[50]).

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[113] W. V. Lancaster (Treasury) to Secretary, Prime Minister's Department, 10 Feb. 1937, AA A461, B320/1/3. The conclusions of a secret conclave of economists and bank officials on the causes, prospects, and policies for economic recovery were conveyed by Giblin to Wilson on 14 Oct. 1935 (Wilson MSS, ABS).

[114] Acting CS (Giblin) to Secretary, Department of Home Affairs, 20 Nov. 1931, (copy), Wilson MSS (ABS): Wilson, 'Price, Quantities and Values', 24 Sept. 1937, H. P. Brown MSS, 36, H. P. Brown Library, Australian National University.

[115] The next general publication issued by the Bureau, the Digest of Current Economic Statistics, did not appear until 22 years later. (W.H.D. Morris, 'Australian Statistics and Commonwealth Bureau of Census and Statistics Publications', Legislative Research Service, Commonwealth Parliamentary Library, [Feb. 1970]. p. 23.)

[116] *Labour Report*, 1943, No. 33, p. 34.

[117] Roland Wilson, 'The Economic Implications of Planning', in W.G.K. Duncan (ed.), *National Economic Planning*, Sydney, 1934, pp. 74–5; Greg Whitwell, 'The Social Philosophy of the F & E Economists', *Australian Economic History Review*, vol. xxv, no. 1, March 1985, pp. 2–6.

[118] H.C. Coombs, *Trial Balance*: Issues of My Working Life, Melbourne, 1983, p. 3. Giblin had been told by Sir Otto Niemeyer of the Bank of England on 19 Oct. 1932 that 'Keynes (of all people) has recently been saying that economists are apt to reason far too much from statistics, to which they attach a degree of dogmatic verity which is hardly deserved by the closeness with which abstract and general statistics fit the varying and individual manifestations of actual business', (Giblin MSS, NLA 366, Ser. 5, 1–88). R.I. Downing saw Clark's work as part of an older tradition rather than as the precursor of the 'social accounts' approach. ('Current Problems of the Australian Economy', in *Business and Economic Policy*. Third Summer School of Business Administration 1958, University of Adelaide, Adelaide, 1958, pp. 5–6.)

[119] Paul Hasluck, *The Government and the People 1939–1941*, Canberra 1965 (1st edn. 1952), pp. 130–1.

[120] Wilson, 'The Economic Implications of Planning', pp. 68–9; Wilson, A Note on Economic Policy and Organization for War, 12 Sept. 1939, AA A571, 39/3251; Hasluck, op. cit., pp. 451–3; S.J. Butlin, *War Economy 1939–1942*, Canberra 1961 (1st edn. 1955), pp. 21–3; Rodney Maddock and Janet Penny, 'Economists at War: The Financial and Economic Committee 1939–44', *Australian Economic History Review*, vol. xxiii, no. 1, March 1983, pp. 28–47.

[121] R.G. Menzies to A. Mair, 21 Nov. 1940, (copy), ABS 57/1530.

[122] Colin Clark to Cameron Hazlehurst, 4 Mar. 1987; Colin Clark and J.G. Crawford, *The National Income of Australia*, Sydney, 1938, pp. 14–18; A/g CS (Carver) to Exley, 7 Jan. 1941, copy, ABS 57/1530; A/g CS to Secretary, Treasury, 8 April 1942, ABS 35/5 (J.C. Stephen file). For the Bureau's collaboration with the military authorities see ABS 62/1983, 67/5938, and AA CP200, Box 3. On censorship, ABS 62/1984 reveals Carver's differences with the navy and Defence department.

[123] Secretary to Treasury to Chairman, Public Service Board 24 July 1943, and reply 27 July 1943, ABS 35/5. Stephen had been flown to Britain in 1942 to study production statistics methods. (E.K. Foreman, 'State Government Statistical Requirements—Historical Perspective', typescript, 30 May 1980, ABS Library.) Another recruit in 1943 was P.H. Karmel. 'He has performed several pieces of original statistical research of a high order,' Carver told the Secretary to the Treasury on 28 Sept. 1944, 'and shows real capacity for the work'. (ABS 35/S.)

[124] ABS 67/5938; S.J. Butlin, *War Economy 1939–1942*, Canberra, 1955, p. 354. Compare U.S. experience in Aryness Joy Wickens, 'Statistics and the Public Interest', *Journal of the American Statistical Association*, vol. 48, no. 261, March 1983, p.3.

[125] H.C. Coombs, 'The Economic Aftermath of War', in D.A.S. Campbell (ed.), *Post-War Reconstruction in Australia*, Sydney, 1944, p.85.

[126] Coombs, *Trial Balance*, p. 51; Selwyn Cornish, *Full Employment in Australia: The Genesis of a White Paper*, Research Paper in Economic History, No. 1, 1981, Department of Economic History, Faculty of Economics, Australian National University, pp. 78–9; Carver to H.C. Green, 1 Nov. 1944, ABS 67/5938. On the emerging post-war agenda, see Robert Watts, *The Foundations of the National Welfare State*, Sydney, 1987.

[127] Director-General, Post-War Reconstruction to A/g CS (Carver), 30 Oct. 1945; 31 Oct., 5/6, 7 Nov. 1945, ABS 53/682.

[128] A/g CS (Carver), to Secretary, Treasury, 5 Dec. 1945, ABS 45/79; *Report and Resolutions of the Thirteenth Conference of Statisticians of Australia . . .* 19 November to 23 November, 1945, Canberra, 1945, pp. 11–12, 4; *Report and Resolutions of the Fifteenth Conference of Statisticians . . .* , 31 October to 4 November, 1949, Canberra, 1949, p. 2. The importance of professional judgment in forecasting was implicitly acknowledged in a report by the Department of Post-War Reconstruction for the I.L.O. in 1948: 'The general method is to study critically the trend in individual statistical series and to use general impressions combined with historical precedents in order to assess the imminence of any downward tendency in effective demand'. (United Nations, Department of Economic Affairs, *The Maintenance of Full Employment . . .* U.N., New York, 1949, Appendix: No. 3 Reply from Australia, p. 77.)

[129] ABS 53/682 covers public finance correspondence and reports 1946 to 1956. On the 1954–55 roads expenditure Solomon revealed 'an error of £10,000,000' in the old system figures.

[130] Prime Minister to Premier, N.S.W., 21 Nov. 1940, (copy), ABS 57/1530.

[131] Prime Minister to Premier, N.S.W., 2 Feb. 1948, 27 June 1949; Premier, N.S.W. to Prime Minister, 13 Feb. 1948, 15 July 1949, (copies), ABS 57/1530.

[132] Secretary, Treasury to Treasurer, 20 July 1951, (copy), ABS 57/1530. Curiously, Carver's appointment did not make him either an officer of the Public Service or of the Parliament. (Minute by R. Whalen, 15 Aug. 1958, ABS 57/1530.) Early in 1971 it was realised that there was no legislative basis on which an 'Acting Commonwealth Statistician' could be appointed when the office of Commonwealth Statistician was vacant. Carver therefore could not validly have been 'Acting Commonwealth Statistician' between 1951 and 1957 although he was properly empowered to perform the duties of the Statistician. The similar situation which occurred after Archer's retirement was expounded in a memorandum from E. Smith (Attorney-General's Department) to Secretary, Treasury, 25 Feb. 1971, ABS 57/1530.

[133] P.C. Spender, 'Proposed Census of 1941', Cabinet Paper, 11 April 1940, AA A461, N 320/1/1; 'Proposals for Effecting Economic Operation Bureau Section 1939–45 War', ABS 62/1982; Clark to Carver 14 May 1945: Carver to Clark 18 May 1945; Director-General, Post War Reconstruction to Minister, 19 Oct. 1945; A/g CS (Carver) to A.P. Elkin, 11 Dec. 1945, ABS 45/79. The refusal of rationing authorities to withhold ration books from applicants who failed to produce occupational survey cards had undermined the comprehensiveness of the occupational survey. (ABS CR8.)

[134] For details of the professional discussions on the 1947 Census, including the decision to drop questions on 'sickness or infirmity' and 'education' see ABS (Treasury) 62/2055, 60/1404, and J.B. Chifley, 'Proposed Census 1947', draft Cabinet submission, 1 Feb. 1946, ABS 45/79. Cabinet rejected the option of deleting all specified categories of census questions from the Act and providing that the contents of the census schedule should be prescribed by regulation. This approach was eventually adopted in 1979. For R.S.L. urging of a census of 'alien immigrants' and queries from the Jewish Council to Combat Fascism and Anti-Semitism about the concept of 'race' embodied in the census schedule see AA A461, p 320/1/1.

[135] CS (Wilson) to Treasurer, 21 June 1950, ABS (Treasury) 62/2055.

[136] CS (Carver) to Secretary, Treasury enclosing 'Date of Next Census', draft Cabinet submission, 20 April 1959, ABS 59/694. With Treasurer Harold Holt's encouragement the Bureau successfully resisted Cabinet pressure to bring forward the 1961 Census so as to facilitate an electoral redistribution before the next Commonwealth election. (J.F. Nimmo to Secretary, Treasury and CS, 28 May 1959, ABS 59/694.) For 1970s see Brian Doyle, 'The Politics of Census Taking', Working Paper No. C2, 1981 Census of Population and Housing, Development Programme, ABS, Canberra, [1979]. By 1973 senior Bureau officers were unconvinced about legislating for quinquennial censuses. 'I wonder about the wisdom of quinquennial Censuses or even the necessity. The decision to do the 1966 one related to Commonwealth Grants & Queensland's population. Our part in the Grants is peculiar. I would rather use the resources on filling up some gaps.' (Minute by C.S. [O'Neill] on K.S. Watson to J.G. Miller, 9 Jan. 1973, ABS 70/2447.)

[137] Memorandum for Secretary, Treasury: draft amendments, Cabinet submission, and associated documents, May-June 1949, ABS (Treasury) 60/1404; S. Horn to D. Trewin, 'History of Legislation', 7 Nov. 1983, ABS. Horn noted that the considerable importance which the changes represented in 'balance of authority' for collecting statistics was 'downplayed in favour of efficiency arguments' in the Cabinet submission. The extension of confidentiality to voluntary returns was made discretionary thirty years later.

[138] Michael Howard, *The Growth in the Domestic Economic and Social Role of the Commonwealth Government in Australia, from the late 1930s to the early Post-war Period: Some Aspects*, Ph. D. thesis, University of Sydney, 1978. Sir Claus Moser, former head of the British Government Statistical Service, noted a hardening of boundaries between economists and statisticians in the mid-1950s. ('Statistics and Public Policy', *Journal of the Royal Statistical Society*, A, vol. 143, 1980, Pt 1, p. 23; cf R. Petridis, 'Australia: Economists in a federal system', in W.A. Coats (ed.), *Economists in Government*: An international comparative study, Durham, N.C., 1981, pp. 71-3); Greg Whitwell, *The Treasury Line*, Sydney, 1986, ch. 1.

[139] Foreman, 'State Government Statistical Requirements . . .'; Carver to A.J. Reid, 10 Sept. 1953, (copy), Sir Stanley Carver MSS, ABS; Archer interview, NLA TRC 12/38.

[140] Brown to Carver, Feb. 1950, Brown MSS, 49; Brown was appointed Reader in Economic Statistics at the Australian National University in 1950 and published his criticisms in 'Australian Statistics—A Programme', *Institute of Public Affairs Review*, May-June 1952, pp. 90-6. E.K. Foreman, 'Development and Co-ordination Division—Historical Note,' 31 March 1977, ABS Library, is a valuable chronicle. Cf K.A. Archer interview, NLA TRC 12/38; Dr F. B. Horner interview, NLA TRC 1594/1; J.P. O'Neill interview, NLA TRC 1613/1; B.D. Haig and S.S. McBurney, *The Interpretation of National Income Estimates*, Canberra, 1968. On the census of retail establishments see 'Census of Distribution in Australia', *Papers Presented at the Conference of British Commonwealth Statisticians 1951 . . .* Canberra, [1951]. pp. 111–13. On challenges to legality of sampling, see 'Proposals for Revision of the Census and

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Statistics Act', March 1967, ABS 64/1537; Secretary, Attorney-General's Department (K.H. Bailey), Memorandum for A/g CS, 8 Oct. 1954, ABS 70/2447. Nearly two years after a Bureau officer had first raised the matter, a judge of the N.S.W. Supreme Court, whose Wahroonga home was in the sample for the quarterly population survey in May 1964, prompted urgent review (and an amendment to the Census and Statistics Act) by advising a senior compiler that in his opinion the act did not authorise the Statistician to obtain information by interview at private dwellings. (Dep. CS [N.S.W.] to CS, 21 May 1964, and minute, O'Neill to A.W. Mumme 27 May 1964, ABS 64/1537; Mumme to I.G. Jones 21 Nov. 1963 and minute 12 June 1962, ABS 70/2447.)

[141] Archer interview, NLA TRC 12/38; unsigned and undated memorandum, [April 1969], ABS 71/3155 Pt 1. The Dominion Bureau of Statistics in Canada had an IBM 705 Model III operational from 1961. The U.S. Bureau of the Census had UNIVAC 1 in service in 1951 but card-to-tape converters were not satisfactory until 1953, and a 'high speed' printer (120 character lines at 600 lines per minute) was not available until 1955. (Marjorie Tucker, 'Recent Developments in the Work of the Dominion Bureau of Statistics,' *Canadian Journal of Economics and Political Science*, vol. xxv, no. 4, Nov. 1959, p. 501; Duncan and Shelton, *Revolution in United States Government Statistics . . .*, pp. 126-8.) Between 1964 and 1971 a network of eleven medium to large scale and four small scale computers costing $12m had replaced the Bureau's mechanical tabulation equipment and associated electronic calculators. Over 800 staff were employed in a computer service centre. (F.N. Bennett, 'Computers and the User of Australian Economic Statistics', paper presented to Section 24, ANZAAS Congress, May 1971; 'Automating Australian Statistics', symposium paper, Statistical Society of Australia, N.S.W. Branch, 24/25 Aug. 1972.)

[142] A.W. Mumme, 'A Case for Functional Specialisation in the Bureau of Census and Statistics', Nov. 1970; P.A.A. Kaufmann, 'Towards a Socio-Demographic Statistics Organisation', 1 Feb. 1972, ABS Library.

[143] Extended scope of duties is outlined in a series of submissions to the Public Service Board in 1974 (ABS, Adelaide, Z/402/2 Pt III).

[144] A/g CS (O'Neill), 'Work Programme and Staff Requirements 1970-72', 9 June 1970, ABS 70/2080; B.D. Haig, 'Indexes of Australian Factory Production, 1949-50 to 1962-63', *The Economic Record*, vol. 41, no. 95, Sept. 1965, pp. 451-2.

[145] Premier, Queensland (Gair) to Prime Minister (Menzies), 16 Dec. 1953; Treasurer (A.W. Fadden), Note for file, 16 Sept. 1957, AA A571, 61/1058.

[146] Carver to Wallace Wurth, 6 Aug. 1954; to A.W. Bowden, 10 Aug. 1954; to F.W. Sayer 15 Sept. 1954; to L.L. Chapman, 6 Oct. 1954; to S.A. Taylor, 20 Jan. 1955, to Wurth, 22 Feb. 1955, Carver MSS, ABS.

[147] Fadden, 'Statistics (Arrangements with States) Bill', Cabinet submission, annexure A, 1 Feb. 1956, AA A571, 563/2351 Pt I.

[148] AA A571 53/2351.

[149] A/g CS (Carver) to Secretary, Treasury, 25 March 1954, ABS 57/1530.

CHAPTER ONE

PRE-HISTORY TO FEDERATION

Early knowledge and discovery of Australia

Pre-history

Humans entered the Australian continent from the South East Asian area during the last glaciation at least 40,000 years ago, at a time when sea levels were much lower than they are today. Even so, these first migrations would have involved a sea voyage of some 60 kilometres, making it possibly the world's earliest sea-borne migration. Settlement was well established 25,000 to 30,000 years ago and by 20,000 years ago almost the entire continent was inhabited.

The original Australians lived as hunter-gatherers, using tools of wood, bone, shell and stone. Archaeological evidence indicates that a simple pan-continental toolmaking tradition existed, characterised by stoneware tools; scrapers were used to fashion further tools out of wood. This continued until 5,000 to 6,000 years ago, at which time a range of more specialised small tools began to emerge. But, in Tasmania, isolated up until 12,000 years ago by the post-glacial rising seas, Aboriginals still maintained the culture of the late Pleistocene period, until subject to the influence of European settlement of the island.

Estimates by anthropologists of the Aboriginal population at the time of European settlement have varied greatly. In 1930, anthropologist Radcliffe-Brown postulated a minimum figure of 300,000, which was officially accepted by the government. Recent archaeological finds suggest that a population of 750,000 could have been sustained. They were divided into some 500 small groups and spoke a variety of languages and dialects. These groups or tribes were further divided into 'bands' or clusters of family groups and formed the basic self-sufficient economic unit. Labour was divided between the sexes: the men hunted while the women foraged for roots and seeds and caught small animals which also formed a basic part of their subsistence. Local groups would congregate when food or water supplies were abundant or when ceremonial obligations demanded. Exchanges at these ceremonial gatherings led to the wide dispersal of goods. Religious and ceremonial activities relating to the land were a vital part of Aboriginal life. Evidence suggests they had developed the use of ochre as a ritual painting material as early as 25,000 years ago.

The physical barriers of distance and aridity within Australia itself caused, in part, cultural isolation and linguistic diversity of its people. European exploration and settlement was for most Aboriginal societies their first contact with an outside culture. The impact of this settlement in those areas where the colonists established themselves led rapidly to the disappearance of the traditional Aboriginal way of life.

Speculation on the Great South Land

The Ancient Greeks, who are said to have believed the world was round, postulated the existence of a Great South Land. The Christian peoples of Middle Ages Europe, for religious reasons however, no longer believed in a global world and saw the earth as flat and bounded by the fiery edges of the equator.

First references to Australia came from the Greeks, the Arabs, the Chinese, the Malays and Indians but are thought to have been largely a product of imagination. To the Malays, for example, the Great South Land though not uninhabited was the Land of the Dead. To the Hindu-Buddhists, who came from the first century A.D. to colonise Sumatra and Java, there were 'islands of gold' to the south of Java and to the south-east of Timor but, like the Middle Ages Christians before them, the beliefs shaped dangers too perilous to confront.

The Chinese recognised the fantasy of these and similar reports which they would certainly have heard of while trading in the area. Their maps show they knew of the Malay peninsula, Sumatra, Java, Bali, Lombok, Timor, the Moluccas, Celebes and Borneo. However, the distances involved were too great and the evidence too small and fanciful, and their primary aim was to maintain the freedom of their existing trade routes rather than embark on new explorations. By the time they might have felt any incentive to explore further, domestic political changes curtailed their outward growth.

It is unclear whether any of these peoples, constrained as they certainly were by religious, superstitious and domestic political factors, paid visits to Australia. If they did, their knowledge made no impact on the world at large or on the history of Australia. Contacts of that nature are part of our documented history and probably begin with the occurrence of 'Java the Great' in a number of French maps dating from the middle decades of the sixteenth century. Although the significance of 'Java the Great' is hotly debated, so long as the Portuguese are thought to have been possible discoverers of large portions of our continent, one cannot easily dismiss suggestions that the French were here in the sixteenth century also.

The Portuguese and the Spanish

Theories that place the Portuguese here sometime in the sixteenth century have some support from inconclusive charts and documents but the assumptions rest largely on three points: the extensive exploration undertaken by this highly civilised sea-faring race elsewhere about the globe; the Portuguese obsession with the quest for wealth, knowledge and conversion; and the certainty that the Portuguese debated the issue of a 'terra australis incognita' ('unknown southern land'). Yet hard, clinching evidence of contact is lacking.

Viceroys of Spain's American empire regularly sought new lands. One such expedition left Callao, Peru, in December 1605 under Pedro Fernandez de Quiros, a man of the Counter-Reformation who desired that Catholicism should prevail in the southland. De Quiros reached the New Hebrides and named the island group 'Austrialia del Espiritu Santo' and he and some later Catholic historians saw this as the discovery of Australia. But the more important voyage was probably that of the other ship of the expedition that continued after de Quiros himself was forced to return to the Americas. Under Luis Vaez de Torres, this other ship sailed through Torres Strait but almost certainly failed to sight Australia. Although both de Quiros and de Torres returned to Hispanic America with enthusiastic fervour for further explorations, they both failed to persuade Spanish officialdom to this course.

Discoveries by the Dutch

A few weeks before de Torres, the Dutch vessel *Duyfken*, after coming along the south coast of New Guinea from the west, swung over to the west coast of Cape York Peninsula in or about March 1606. Under the command of Willem Jansz, the *Duyfken* traversed some 200 miles of the Australian coastline as far as Cape Keer-Weer (Turn Again) without actually discovering Torres Strait. Subsequent visits were made by other Dutch vessels sailing from the Cape of Good Hope to Java which were often carried too far east and hit Australia. The first and most famous of these was Dirk Hartog's *Eendracht*, from which men landed and left a memorial at Shark Bay, Western Australia in October 1616. Hartog was followed by Houtman (1619), Carstensz (1623), Nuyts (1626–27), Thijssen (1627), Pelsaert (1629), Tasman (1642) and others.

Most important of all was the work of Abel Tasman, who was such a well-respected seaman in the Dutch East Indies that Governor-General of the Indies, Anthony van Diemen, commissioned him to undertake a southern exploration. In November 1642, having made a great circuit of the seas, Tasman sighted the west coast of what he called Van Diemen's Land (Tasmania). He then explored New Zealand before returning to Batavia. A second expedition in 1644 contributed to the knowledge of Australia's northern coast, and established the name of 'New Holland' for the southern landmass.

Discoveries by the English

The English had made their first appearance on the Australian coast in 1688, when the north-westerly shores were visited by William Dampier in the trading vessel *Cygnet*. In 1699 he again visited Australia in command of H.M.S. *Roebuck*. On his return to England, he published an account in which a description was given of trees, flowers, birds, and reptiles he had observed, and of his encounters with the natives.

Up until the end of the seventeenth century, it was not certain if Tasmania and New Zealand were parts of Australia or whether they were separated from it, yet formed part of a great Antarctic Continent. Lieutenant (later Captain) James Cook's first voyage, though undertaken primarily for the purpose of observing from Tahiti the transit of Venus, had also the objective of ascertaining whether the unexplored part of the southern hemisphere did in fact contain another continent. In command of H.M.S. *Endeavour*, and accompanied by botanist Sir Joseph Banks, naturalist Dr Daniel Solander, astronomer Charles Green, draughtsmen and servants, James Cook, after observing the transit of Venus at Tahiti, turned towards New Zealand, sighting that land on 7 October 1769 in the vicinity of Poverty Bay.

On 20 April 1770, Cook sighted the Australian mainland at a place he called Point Hicks, naming it after his first-lieutenant, who saw it first. Coasting northwards, on 29 April 1770 he landed at Botany Bay. Cook resumed his voyage and sailed along the coast in a northerly direction for nearly 2,100 kilometres, before striking a coral reef in the vicinity of Trinity Bay where the *Endeavour* was seriously damaged. It was nearly two months before repairs were completed and Cook again set a course to the north through Torres Strait.

The annexation of Australia

On 22 August 1770, Captain Cook took possession 'of the whole eastern coast, from latitude 38°S, to this place, latitude 10½°S, in right of His Majesty King George the Third', that is, over what now constitutes Victoria, the eastern parts of New South Wales and Queensland.

Annexation of the eastern part of the Australian continent and Tasmania

Formal possession, on behalf of the British Crown, of the whole of the eastern part of the Australian continent and Tasmania was taken on 7 February 1788, when Captain Phillip's commission, first issued to him on 12 October 1786 and amplified on 2 April 1787, was read to the people whom he had brought with him in the 'First Fleet'. The commission appointed Phillip

> Captain-General and Governor-in-Chief in and over our territory called New South Wales, extending from the Northern Cape or extremity of the coast called Cape York, in the latitude of ten degrees thirty-seven minutes south, to the southern extremity of the said territory of New South Wales or South Cape, in the latitude of forty-three degrees thirty-nine minutes south and of all the country inland, westward as far as the one hundred and thirty-fifth degree of east longitude, reckoning from the meridian of Greenwich, including all the islands adjacent in the Pacific Ocean within the latitude aforesaid of ten degrees thirty-seven minutes south and forty-three degrees thirty-nine minutes south.

By the middle of 1829, the whole territory, now know as Australia, had been constituted a dependency of the United Kingdom.

CHRONOLOGICAL TABLE OF MAJOR EVENTS IN AUSTRALIA DURING THE PAST TWO CENTURIES

1788

Arrival of 'First Fleet' at Botany Bay. Land in vicinity found unsuitable and the expedition moved to Sydney Cove on 26 January. Formal proclamation of the colony and the establishment of a regular government on 7 February.

1790

'Second Fleet' arrives with New South Wales Corps.

1791

'Third Fleet' arrives. Territorial seal brought by Governor King.

1792

Visit of the first foreign trading vessel, the *Philadelphia.*

1793

Arrival of the first free immigrants on the *Bellona*. First Australian church opened in Sydney.

1795
First printing press opened in Sydney.

1797
Introduction of merino sheep from the Cape of Good Hope. Coal discovered near Newcastle.

1798
Tasmania is proved to be an island by the voyage of Bass and Flinders.

1800
First Customs House established in Sydney.

1802
Discovery of Port Phillip.

1803
First Australian wool taken to England. Issue of the *Sydney Gazette*, the first Australian newspaper. First settlement at Port Phillip attempted.

1804
Hobart founded. Abandonment of settlement at Port Phillip.

1805
First extensive sheep farm established at Camden by Captain Macarthur.

1807
First shipment of merchantable wool from New South Wales to England.

1809
Free school established in Sydney.

1810
Post Office established in Sydney.

1813
Passage of the Blue Mountains discovered by Wentworth, Lawson and Blaxland.

1814
The name 'Australia', instead of 'New Holland', suggested by Flinders. Civil courts created.

1815
First free settlers arrive in Hobart.

1816
Sydney Hospital opened.

1817
First bank in Australia—Bank of New South Wales—opened in Sydney.

1821
Penal settlement at Macquarie Harbour in Tasmania established.

1823
New South Wales Judicature Act passed.

1824
New South Wales constituted a Crown Colony. Executive Council formed. Supreme Court at Sydney established, and trial by jury introduced . Penal settlement founded at Moreton Bay, Brisbane.

1825
Tasmania proclaimed a separate colony.

1827
First official claim of British sovereignty over all Australia.

1828
Second Constitution of New South Wales and first census.

1829
Foundation of Perth as a settlement on Swan River, Western Australia.

1830
Publication of *Quintus Servinton*, first novel to be published in Australia.

1831
SS Surprise, the first steamship built in Australia, launched at Sydney. First coal ship from Newcastle launched. First assisted immigration to New South Wales.

1835
Foundation of Melbourne.

1836
Foundation of Adelaide. Port Phillip (Victoria) district proclaimed as open for settlement.

1838
Assignment of convicts discontinued. Settlement at Port Essington, Northern Territory.

1840
Transportation of convicts to New South Wales abolished. Moreton Bay (Queensland) opened for free settlement.

1841
New Zealand proclaimed a separate colony from New South Wales.

1842
Incorporation of Sydney and incorporation of Melbourne.

1843
First Representative Constitution of New South Wales.

1847
Overland mail established between Sydney and Adelaide.

1849
Exodus of population to the goldfields of California. Transportation to Western Australia commenced.

1850
Final abolition of transportation to New South Wales. Sydney University founded. Representative government granted to Victoria and Tasmania.

1851
Gold discovered in New South Wales. Port Phillip created an independent colony under the name of Victoria. Legislative Council established in Western Australia.

1852
Arrival of *Chusan*, first P. & O. mail steamer from England.

1853
Transportation to Tasmania abolished. Melbourne University founded.

1854
Riots on the Ballarat goldfields and the Eureka Stockade stormed. Telegraph first used. First Australian Railway opened in Victoria.

1857
Manhood suffrage and vote by ballot introduced in Victoria.

1858
Manhood suffrage and vote by ballot introduced in New South Wales. Sydney, Melbourne and Adelaide linked by telegraph.

Population of Australia reached 1,000,000.

1859
Queensland proclaimed a separate colony.

1860
Burke and Wills expedition leaves Melbourne.

1861
Anti-Chinese riots on goldfields of New South Wales. Regulations introduced on Chinese immigration. Burke and Wills perish at Coopers Creek, South Australia. World's first freezing works built in Sydney, eventually leading to meat exports. First Melbourne Cup held.

1863
Intercolonial Conference in Melbourne.

1864
First sugar made from Queensland cane.

1866
Camels introduced to South Australia.

1867
First Royal visit to Australia. Protective tariff imposed.

1868
Hougomont, the last convict ship arrived in Western Australia.

1870
Intercolonial Exhibition held in Sydney. Imperial troops withdrawn from New South Wales. Intercolonial Congress in Melbourne.

1871
Permanent military forces raised in New South Wales.

1872
Telegraph cable from Java to Port Darwin. Transcontinental telegraph line completed.

1873
Intercolonial Conference at Sydney. Mail service with San Francisco inaugurated.

1874
Intercolonial Conference at Sydney. University of Adelaide founded.

1876
Completion of telegraph cable between Sydney and Wellington, New Zealand.

1877
Population of Australia reached 2,000,000.

1878
Chinese immigration to Queensland restricted. Telephone introduced to Australia.

1880
First telephone exchange opened in Melbourne. Federal Conference at Sydney and Melbourne. Women first admitted to universities.

1881
Censuses taken on same date in all colonies for the first time.

1883
New South Wales and Victoria linked by railway. Federal Conference held at Sydney.

1884
Federation Bill passed in Victoria but rejected in New South Wales. British protectorate declared over New Guinea.

1885
Australian contingent sent to the war in Sudan.

1887
First 'Colonial' Conference held in London.

1888
Railway communication opened between Sydney and Brisbane. World Expo held in Melbourne to commemorate Australia's centenary.

1889
A new Constitution framed in Western Australia. Railway communication opened between Melbourne and Adelaide.

Population of Australia reached 3,000,000.

1890
Western Australia granted responsible government. Australasian Federation Conference at Melbourne. University of Tasmania founded.

1891
First Federal Convention at Sydney, draft Bill framed and adopted. Assisted immigration to New South Wales ceased.

1893
Financial crisis in eastern States.

1894
Women's suffrage granted in South Australia—first Australian State to do so.

1895
Conference of Premiers on Federation at Hobart. Land and income taxes introduced in New South Wales.

1897–98
Sessions of Federal Convention at Adelaide, Sydney and Melbourne.

1898
Draft Federal Constitution Bill rejected by New South Wales.

1899
Australian troops sent to war in South Africa. Conference of Premiers in Melbourne, Federal Constitution Bill amended.

1900
Naval troops sent to war in China. Commonwealth Constitution Act received Royal Assent, 9 July. Proclamation of the Commonwealth signed 17 September. Mr (later Sir) Edmund Barton formed the first Federal Ministry. Old age pension instituted in New South Wales.

1901
Commonwealth proclaimed at Sydney. First Commonwealth Parliament opened at Melbourne. Interstate free-trade established.

1903
The Federal High Court inaugurated.

1904
Commonwealth Conciliation and Arbitration Act passed.

1905
Census and Statistics Act. Assisted immigration to New South Wales re-introduced.

Population of Australia reached 4,000,000.

1906
Papua taken over by the Commonwealth of Australia.

1907
First telephone trunk line service between the capital cities. Imperial Conference in London.

1908
Canberra chosen as the site of the Australian Capital.

1909
Imperial Defence Conference in London. Queensland University founded. The Commonwealth Age Pension Scheme introduced.

1910
Penny postage. Australian Notes Act passed and the first Commonwealth notes issued. Arrival of the first vessels built for the Royal Australian Navy, the *Yarra* and the *Parramatta*.

1911
First Commonwealth Census taken. The Australian Capital Territory and the Northern Territory transferred to the Commonwealth. Compulsory military training introduced.

1912
Commonwealth Bank opened. First payments of Maternity Bonus. University of Western Australia founded.

1913
Canberra officially named as the Australian Capital and the foundation stone laid.

1914
Norfolk Island transferred to the Commonwealth. War declared in Europe on 4 August. Australian and New Zealand Army Corps (ANZAC) formed. Australia's first aerial mail, flown from Melbourne to Sydney.

1915
ANZAC troops landed at Gallipoli, 25 April. Evacuated 18–20 December. Commonwealth Census planned but shelved. Broken Hill Proprietary's Ironworks at Newcastle, New South Wales, opened.

1916
Australian and New Zealand mounted troops in Egypt, Palestine and Syria. First proposal for compulsory military service overseas defeated by referendum.

1917
Second referendum on conscription for overseas service defeated. Transcontinental railway completed.

1918
Australian divisions in France blunt the German offensive. Australia House opened in London. Armistice with Germany, 11 November.

Australia's population reached 5,000,000.

1919
Peace Conference. Peace Treaty signed at Versailles, 28 June. Flight from England to Australia by Captain Ross Smith and Lieutenant Keith Smith.

1920
Imperial Statistical Conference in London. Qantas began operations.

1921
Mandate given to Australia over the Territory of New Guinea. Second Commonwealth Census.

1922
Queensland Legislative Council abolished.

1923
First Australian radio broadcast.

1925
Australian population reached 6,000,000.

1926
Council for Scientific and Industrial Research (CSIR) established.

1927
Seat of Commonwealth Government transferred from Melbourne to Canberra.

1929
Peace-time compulsory military training abolished in favour of a voluntary system.

1930
World-wide economic depression reached Australia. First Australian appointed Governor-General of Australia (Rt. Hon. Sir Isaac Alfred Isaacs, G.C.M.G., Chief Justice of the High Court).

1932
Sydney Harbour Bridge opened. The Australian Broadcasting Commission established. Imperial Economic Conference held in Ottawa.

1933
World Economic Conference held in London. Antarctica and Ashmore and Cartier Islands taken over by the Commonwealth. Third Commonwealth Census.

1934
England–Australia Air Mail Service inaugurated.

1935
Empire Statistical Conference at Ottawa.

1936
Tasmania linked with the mainland by submarine telephone cable.

1937
Imperial Conference in London.

1938
New trade treaty with Japan.

1939
War declared on Germany, 3 September. Australian troops embarked for the Middle East, 15 December.

Australia's population reached 7,000,000.

1940
Exchange of Ministers between Australia and the U.S.A. marked Australia's entry into the field of direct diplomatic representation with countries other than the United Kingdom. First Australian convoy sailed for Middle East.

1941
Australian Eighth Division arrived in Malaya. Japanese attacked Pearl Harbour, Malaya, Thailand, Hong Kong and the Philippines. Australia declared war on Japan, 9 December. Establishment of Child Endowment scheme.

1942
General Douglas Macarthur set up headquarters of South West Pacific Command in Melbourne. Battle of the Coral Sea. Federal uniform taxation adopted. Commonwealth widows' pension introduced.

1944
Referendum refused Commonwealth Government increased power in the post-war period.

1945
Australia ratified the United Nations Charter. War in Europe ceased, 8 May. War in Pacific ceased, 15 August. Banking Act introduced to regulate banking and to protect the currency and public credit.

1946
The Commonwealth Employment Service inaugurated. Trans-Australian Airlines began operations. Constitution Alteration Referendum granted powers with regard to social services to the Commonwealth Government.

1947
End of demobilisation. Census of Australia held.

1948
Forty-hour week effective throughout Australia. First Holden motorcar produced.

1949
Nationality and Citizenship Act operative. Certain Aboriginals granted franchise at Federal elections for the first time. Coal miners strike over hours, wages and leave claims. Australian Whaling Commission established. The Snowy Mountains Hydro-electric Power Scheme commenced.

Australia's population reached 8,000,000.

1950
Severe floods in New South Wales. Australian forces joined the British Commonwealth Brigade in the Korean War. Conference of Commonwealth Prime Ministers in London.

1951
Jubilee celebrations marked the fiftieth year of Australian Federation. Heard Island and the Macdonald Islands transferred to the Commonwealth. Hostilities with Germany officially ceased. Japanese Peace Treaty signed. Third Conference of Government Statisticians of the British Commonwealth held in Canberra.

1952
Widespread bushfires in Victoria, New South Wales and the Australian Capital Territory. Third British Commonwealth Scientific Official Conference held in Canberra and Melbourne. Uranium deposits discovered at Rum Jungle, Northern Territory. British detonate atomic weapon on Monte Bello Islands off the north-west coast. British Commonwealth Economic Conference in London.

1953
Television Act authorised the establishment of both Government and Commercial television stations. Northern Territory Aboriginals given citizenship rights. Atomic Energy Commission established. Korean armistice signed.

1954
Australian Census taken. Transfer of Cocos Islands to the Commonwealth proposed. Queen Elizabeth II became the first reigning monarch to visit Australia.

1955
Food and Agriculture Organization Conference held in Brisbane. Australian troops sent to Malaya. Cocos (Keeling) Islands became a Commonwealth Territory. First power generated by the Snowy Mountains Hydro-electric Authority.

Australian population reached 9,000,000.

1956
Olympic Games held in Melbourne. Bilateral agreement signed between Australia and the U.S.A. for peaceful uses of atomic energy. Regular television transmissions commenced.

1958
Lucas Heights nuclear reactor opened near Sydney. Christmas Island transferred to Commonwealth administration.

1959
Population reached 10,000,000.

1960
Provision made for Social Service benefits to be paid to Australian Aboriginals.

1961
Oil is discovered in south-west Queensland. Iron-ore deposits estimated at 1,800 million tons discovered at Pilbara, Western Australia. Population Census taken.

1962
Commonwealth and Western Australian Electoral Acts amended to provide for votes for Aboriginals. Aboriginals exercise voting rights in the Northern Territory for first time.

1963
Australia signed Nuclear Test Ban Treaty.

Australian population reached 11,000,000.

1964
RAN Destroyer *Voyager* sunk in collision. Army send advisors to Vietnam.

1965
Royal Australian Mint opened. Australian troops go to war in Vietnam. First trade agreement between Australia and the U.S.S.R. Economic sanctions imposed on Rhodesia.

1966
Australia adopted decimal currency. Census of population held. Permanent employment of married women by Australian Government proclaimed.

1967
Worst bushfires in the history of Tasmania damaged Hobart and southern Tasmania. New white ensign adopted by the RAN. Australia launched its first satellite at Woomera.

1968
Australian population reached 12,000,000.

1969
The Arbitration Commission handed down its decision on equal pay for women. Bass Strait under-sea oil piped to shore for the first time.

1970
Australia signed the Nuclear Non-Proliferation Treaty. Coal miners in three States are awarded a 35 hour working week. Voting age reduced to 18 in Western Australia.

1971
Australia joined the OECD. Population Census held. Australian troops withdrew from Vietnam. Daylight saving adopted in New South Wales, Victoria and the Australian Capital Territory.

1972
Female employees received full entitlement to equal pay. Celsius adopted in lieu of the Fahrenheit thermal measure. Australian Labor Party won Federal election for first time in 23 years. Australia established diplomatic relations with the People's Republic of China and the German Democratic Republic.

1973
Papua New Guinea attained self-government. All tariffs cut by 25 per cent. First meeting of the Aboriginal Consultative Committee.

1974
Major floods and storms caused damage in the eastern States. Cyclone Tracey hits Darwin. Plans announced for maximum security laboratory to protect livestock against exotic diseases. Colour television introduced.

1975
Medibank introduced. Federal Parliament dissolved and the Australian Labor Party defeated at a general election on 13 December. Papua New Guinea ceased to be an Australian territory and became an independent nation. Australia Council created.

1976
Census of Australia held. Australian Savings Bonds introduced.

Australian population reached 14,000,000.

1977
Aboriginal Land Rights Act passed. Granville rail disaster claimed 80 lives.

1978
Northern Territory gained self-government. Federal Government recognised the absorption of Timor into Indonesia. 'Boat people' refugees from Indo-China arrived in large numbers.

1979
Series of serious strikes in opposition to Fraser Government's economic policies. Severe bushfires threatened Sydney. Tasmanian Hydro-Electric Commission released a report recommending a massive power development scheme in south-west Tasmania, sparking the commencement of the controversial 'Save the Franklin' campaign.

1980
Whale Protection Act passed. Multicultural television broadcasting commenced. Drought takes hold across Australia. Fraser Government returned to office.

1981
Census of Australia held. (Campbell) Committee of Inquiry into the Australian Financial System recommended deregulation.

Australian population reached 15,000,000.

1982
Australian economy depressed. Severe drought in the eastern States. Australian National Gallery opened in Canberra. Commonwealth Games held in Brisbane. Freedom of Information Act became operative.

1983
General election held, resulting in an Australian Labor Party victory. Australia won the Americas Cup. Severe bushfires in Victoria and South Australia. Medicare introduced. Prices Surveillance Authority created. Cocos (Keeling) Islanders voted to integrate with Australia. Royal Commission into British Nuclear Tests in Australia established.

1984
Nuclear Disarmament Party (NDP) formed. Hawke Government returned to office. Referenda on State/Commonwealth transfer of powers and the simultaneous election of the House of Representives and the Senate rejected. Parliament increased in size: House of Representatives from 125 to 148 and Senate from 64 to 76. World's first frozen embryo baby born in Melbourne.

1985
Ban placed on uranium exports to France. Substantial deregulation of the banking system. Economic summit on tax reform. Split in the Nuclear Disarmament Party (NDP). Report of the Royal Commission into British Nuclear Tests in Australia tabled in Parliament.

1986
Constitutional severance from the United Kingdom. Car bomb exploded at Turkish Consulate in Melbourne. Census held. Sighting of Halley's Comet. Twelve miners died in a mine cave-in in Moura, Queensland. Bomb exploded at Melbourne Police Head Quarters. Pope visited Australia. Aussat launched.

Australia's population reached 16,000,000.

1987
Hawke Government returned to power in July general election. Australia lost Americas Cup. Prime Minister Hawke announced plans to streamline government administration.

Sources: Keesing's Contemporary Archives: Record of World Events. The Annual Register: A Record of World Events. Year Book Australia. Acts of the Parliament of the Commonwealth.

The exploration of Australia

Early exploration

From 1788, when Governor Phillip established his colony on the shores of Port Jackson, expeditions began to explore the immediate area of settlement in search of good farming land. Among suitable locations discovered were those just above the head of the Parramatta River, where the settlement of Rose Hill (later Parramatta) was established in November 1788, and the alluvial flats of the Hawkesbury River, which were explored in 1789.

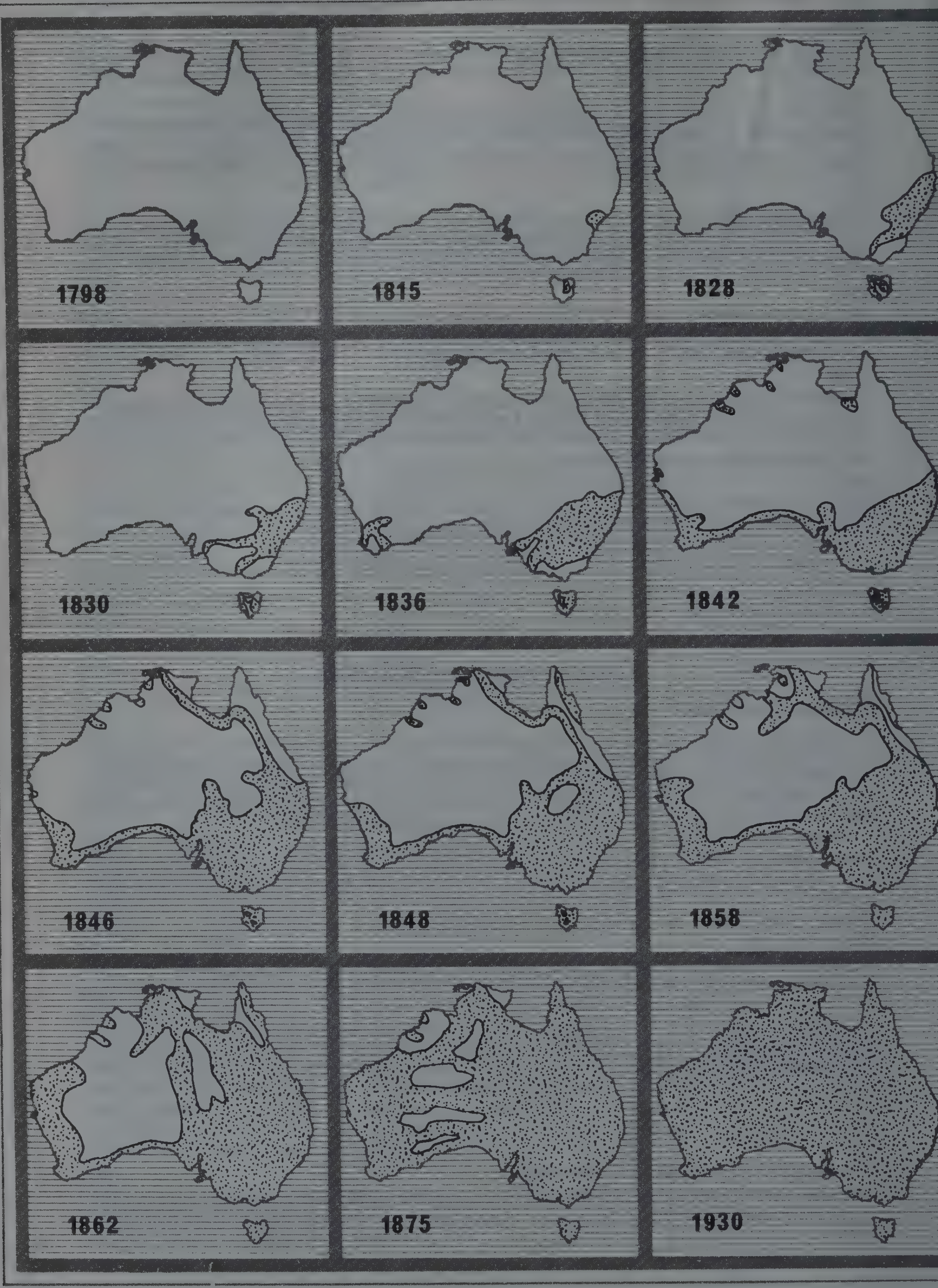
Other minor exploratory journeys in the 1790s and early 1800s included: John Wilson's investigation of various parts of the Southern Highlands of New South Wales, Lieutenant John Shortland's discovery of the Hunter River and the future site of Newcastle, and expeditions by Henry Hacking (1794), George Bass (1796), Francis Barrallier (1802) and George Caley (1804) in attempts to penetrate the mountain foothills west of the Nepean River.

After two decades of colonisation, settlement stretched along the east coast from the Hawkesbury River to the cedar forests of Illawarra yet reached barely 65 kilometres inland, where a seemingly impenetrable barrier was presented in the form of the Blue Mountains.

In 1813, Gregory Blaxland, Lieutenant William Lawson and William Charles Wentworth succeeded in finding a route through the mountain range, thereby allowing the later exploratory parties of George Willian Evans (1813 and 1815), John Oxley (1817 and 1818), Allan Cunningham (1823 and 1827), Hamilton Hume and William Hovell (1824) and others, to open the way for expansion from Port Phillip in the south, to the Darling Downs in the north.

The eastern rivers and to the south

From 1828 to 1841, exploration of south-eastern Australia was concerned mainly with establishing whether or not a large river system emptying into the sea on the south coast existed.


1798
1815
1828
1830
1836
1842
1846
1848
1858
1862
1875
1930

This map series shows the work of the explorers at various significant times in Australia's history.

Between December 1828 and February 1829, an expedition led by Charles Sturt followed the Macquarie River to its meeting with the Darling River. Sturt also explored part of the Castlereagh River. On his next expedition, in 1830, Sturt pieced together more of the network of waterways which make up the Murray-Darling system by following the Murrumbidgee River from Jugiong down to the junction with the Murray, which he then followed as far as Lake Alexandrina and Encounter Bay on the southern coastline. Sturt completed his exploration of the Murray in 1838 by investigating and charting its upper reaches.

Meanwhile, Captain John Macarthur and others had discovered that merino sheep were naturally suited to the dry climate of inland Australia. The colony's wool industry flourished, and by 1831, 1,340 tonnes of fine wool was being exported annually. As a result of the wool boom, settlers became anxious to push further inland in the search for new pastures.

In three expeditions between 1831 and 1836, Thomas Livingston Mitchell explored the Liverpool Plains and discovered the Macintyre River; discovered well-grassed country at the junction of the Darling and Bogan Rivers; explored the Lachlan River to its meeting with the Murrumbidgee River, the Murray with its meeting with the Darling River, and south and south-east of the Murray through the region called 'Australia Felix' to Discovery Bay on the southern coast.

The push south continued and, in 1838, Angus McMillan discovered a practicable route from Monaro to the southern coastline. In 1840, Paul Edmund de Strzelecki made a journey from the Murrumbidgee River, south to Melbourne, during which he discovered and named Mount Kosciusko.

The south

In 1831, Captain Collet Barker landed at what was to become Port Adelaide. Later, cattle-droving journeys undertaken by Joseph Hawdon, Charles Bonney, Charles Sturt and E. J. Eyre, established links between the settlement of Adelaide and other settlements in the east of the State.

In August 1844, Charles Sturt led a sixteen-man expedition from Adelaide into the interior with instructions to investigate a theory that an inland sea existed. After much hardship and near disaster during a period of exceptional heat in the region, Sturt found the channels of Cooper's Creek which formed part of the inland river system of Queensland. However, with the waters drying up rapidly in November 1845, heat and his health deteriorating, Sturt was forced to retreat, mistakenly declaring the land to be worthless.

North-eastern Australia

In 1844 Ludwig Leichhardt left Jimbour Station on the Darling Downs, to lead an expedition on an epic fourteen and a half month, 4,800 kilometre journey north and north-west to Port Essington, thereby winning a reputation for opening up large tracts of rich grazing land. In 1848 however, while on another expedition, he and his party disappeared without trace when attempting to cross the continent westwards to Perth. Ironically, much valuable incidental exploration was carried out when search parties attempted to find them.

Meanwhile, Thomas Mitchell's fourth expedition in 1846 had failed in its objective to find a river which flowed to the northern coast, but did lead to the opening up of good pastoral country in the Maranoa and Barcoo Rivers regions.

In 1848, E. B. Kennedy was speared to death by local Aboriginals while exploring the interior of Cape York Peninsula from Rockingham Bay to the Cape.

In the mid- to late 1850s, Angus C. Gregory led two expeditions: one, in 1855 across northern Australia in a west-east direction from the mouth of the Victoria River to the east coast at Port Curtis; and the other, in 1858, from the Barcoo River south to Adelaide.

Exploration of what was by then the new colony of Queensland was continued through the 1860s and 1870s by George Dalrymple, Ernest Henry, the Macdonald brothers, William Hann, James Venture Mulligan, R. L. Jack and others. These led to the founding of such towns as Bowen, Rockhampton and Mackay, and the opening up of much valuable farming land.

Across the continent south to north

In the late 1850s and early 1860s, most exploratory interest was concentrated on Central Australia, especially after John McDougall Stuart raised a Union Jack on what he considered to be the geographic centre of the continent, Central Mount Stuart, in April 1860. The South Australian Government had previously offered a large reward to the first explorer to cross Australia from south to north.

In August 1860, Robert O'Hara Burke and W. J. Wills set out from Melbourne with a large party to take up the challenge. On 11 February 1861, four expedition members (Burke, Wills, John King and Charles Gray) reached a mangrove swamp on what appeared to be the coast at the Gulf of Carpentaria (though they could not see the sea). After a succession of sorry incidents, however, Burke, Wills and Gray all died of exposure and starvation while on their return journey.

As in the case of Leichhardt, search parties sent out after Burke and Wills discovered much valuable land in their own right; John McKinlay led an expedition from Adelaide to the north-east; William Landsborough from the Gulf of Carpentaria southward; and Frederick Walker from Rockhampton to the west.

Meanwhile, John McDougall Stuart had set out from Adelaide on his own expedition across Australia and, in July 1862, reached the sea at Van Diemen Gulf.

The west

As early as 1697, Willem de Vlamingh of the Dutch ship *Geelvinck*, carried out limited inland exploration on the west coast of Australia in the vicinity of the Swan River. However, the first major inland exploration in the colony of Western Australia took place 130 years later when, in 1827, Edmund Lockyer explored the watershed of the Kalgan River to within about 60 kilometres of its mouth.

In the 1830s, exploration and settlement were directed mainly to the south of the city of Perth (founded in 1829). Among the explorers during this decade were: Ensign Robert Dale, who found the rich agricultural land of the Avon Valley (1830); Lieutenant H. W. Bunbury, who opened the way to rich pastoral flats in the south-west (1836); and Captain George Grey, who discovered the rich hinterland that now serves Geraldton (1839).

In 1848, J. S. Roe, who had also conducted several exploratory journeys in the 1830s, discovered good grazing country while on a 2,900 kilometre York-Pallinup River, Russell Range-Bunbury-Perth trek.

During the 1850s and 1860s the south-west was extensively occupied as far south as Albany and Kojonup, while to the north the Greenough district rapidly developed into the principal wheat-producing region of the State.

Due largely to the efforts of Grey in the 1830s, the Gregory brothers in the 1840s, 1850s and 1860s, and the Forrest brothers in the 1860s and 1870s, pastoralists were able to gradually push further north and occupy the Murchison, Gascoyne and De Grey districts. By the 1880s, again due largely to exploration by the Forrest brothers, the Kimberley region was also settled.

The hinterland

In 1875, Ernest Giles set out from Beltana, South Australia, and made a 4,000 kilometre journey to Perth. Two years earlier, two other parties, led by Peter Egerton Warburton and W. C. Gosse, had explored west from the MacDonnell Ranges to the Oakover River, and from Alice Springs to Perth respectively.

Exploration of the hinterland was continued by W. P. Goddard (1890), J. H. Rowe (1895), A. W. Canning and others into the early twentieth century.

Tasmania

In 1793 Lieutenant John Hayes, commander of the *Duke of Clarence* expedition, sailed up the Derwent River to the foot of Mount Direction from where he proceeded by boat up to the present site of New Norfolk. He became the first explorer to journey more than a few kilometres inland from the coast of Van Diemen's Land (by which name Tasmania was known until 1856). Then, as always, the island's rugged topography hindered any extensive exploration, and it was not until 1807 that Lieutenant Thomas Laycock crossed the island from Port Dalrymple to Hobart.

Much early exploration was carried out either with the encouragement of Lieutenant-Governor William Sorell (including expeditions aimed primarily at discovering the nature of the west coast and determining its suitability for a future penal settlement), or under the auspices of the Van Diemen's Land Company which fostered efforts to find land suitable for agricultural settlement.

Some of the most noteworthy of Tasmania's early explorers were official surveyors, including John Oxley, G. W. Evans and Thomas Scott who, between 1820 and 1837, examined parts of the east, north-west and west coasts and, no doubt, influenced decisions to establish the infamous penal settlements at Macquarie Harbour (in 1822) and Port Arthur (in 1830).

Between 1820 and 1840, a considerable amount of incidental exploration resulted, both from expeditions to round up the remaining Tasmanian Aboriginals following the declaration of martial law against them in 1828, and from the personal encouragement by Lieutenant-Governor Sir John Franklin of scientific expeditions to Tasmania in the late 1830s and early 1840s.

During 1840 and 1850, licensed surveyor N. L. Kentish was responsible for opening up the rich pastoral areas between the north-west coast and the high mountains, while Assistant-Surveyor James Scott explored much of the north-east.

The years 1860 and 1870 were marked by a number of exploratory journeys in search of minerals, including those of Charles Gould (1862), who found traces of silver, lead and gold in the Franklin and Gordon Valleys; James Smith (1871), who discovered tin at Mount Bischoff, destined to become the richest mine of its kind in the world; and C. P. Sprent (1876–77), who found gold, copper, osmiridium and platinum while prospecting between the Arthur and Pieman Rivers.

The federal movement in Australia

Due to the size of the Australian continent and the circumstances surrounding the establishment of the various settlements, the initial tendency was toward individual evolution of the separate colonies. However, it was not long before the importance of intercolonial relationships was clearly recognised.

Governor Fitzroy, in 1846, and Earl Grey, in 1847, saw that there were questions which affected 'Australia collectively, the regulation of which in some uniform manner, and by some single authority, may be essential to the welfare of them all', and a 'central legislative authority for the whole of the Australian colonies' was actually contemplated. Even so far back as 1849, a Privy Council Committee recommended a uniform tariff, and the constituting of one of the Governors as Governor-General of Australia, Sir Charles Fitzroy being actually appointed as 'Governor-General of all her Majesty's Australian Possessions'. The office, however, was nominal rather than actual, and expired in 1861. Dr Lang's idea of 'a great federation of all the colonies of Australia' was put forward in 1852, and a Victorian committee in 1853 advocated the value of a General Assembly of Delegates for the whole of Australia.

The need of union was urged by the *Sydney Morning Herald* in 1854, and although Wentworth sought in 1857 to bring about the creation of a Federal Assembly, a draft 'Enabling Bill' proved unacceptable to Her Majesty's Government. In the same year Mr (afterwards Sir) Charles Gavan Duffy secured the appointment of a select committee of the Victorian Legislative Assembly to consider the necessity of a federal union of the Australasian colonies. The need for such a union was unanimously affirmed, the general opinion being that it should not be longer delayed. In the same year, a select committee of the New South Wales Legislative Council also considered this question, fully recognizing that antagonisms and jealousies were likely to arise through delay.

Union was a fair way towards realisation when the advent of the Cowper Administration destroyed all chance of attaining it, owing to the antagonism of Mr Cowper and Mr (afterwards Sir) James Martin. South Australia, also in the same year, and Queensland in 1859, were both unfavourable to the federal scheme. A second attempt by Mr Duffy to bring about a conference in 1860 failed also.

Tariff differences, however, compelled political attention to the matter, and in 1862 correspondence was opened up by South Australia regarding tariff uniformity. By means of Intercolonial Conferences between 1863 and 1880 some degree of uniformity in legislation and a measure of concerted administration were realised. In March 1867, Mr (afterwards Sir) Henry Parkes expressed himself as follows:

> . . . The time has arrived when these colonies should be united by some federal bond . . . There are questions projecting themselves . . . which cannot be dealt with by . . . individual Governments . . . I believe it will lead to a permanent federal understanding.

The Federal Council

The conference of November–December 1880 and January 1881 recommended the creation of a federal council, believing that the time had not arrived for a federal constitution with a federal parliament. Until 1883, however, every effort proved abortive. In November of that year, a convention, at which the seven colonies and Fiji were represented, met in Sydney. A Bill to establish the Federal Council for Australasia, drafted by Mr (later Sir) Samuel Griffith was, after some modification by a committee of the convention, adopted. In July and August 1884, the Crown was addressed, requesting the enactment of a Federal Council Act. New South Wales and New Zealand, however, endorsed the view of Sir Henry Parkes that a 'Council' would impede the way for a sure and solid federation. The Bill, introduced by the Earl of Derby in the House of Lords on 23 April 1885, became law on 14 August as *The Federal Council of Australasia Act 1885*. The Council's career, however, soon showed that it could not hope to be effective, and it met for the last time in January 1899.

Formative stages of the federal movement

As early as 1878, the necessity for federal defence was vividly brought into Australian consciousness, and arrangements for naval protection were entered into with the Imperial Government. These were ratified by the Australasian Naval Force Act. Queensland, however, did not come into line until 1891.

Early in 1889, Sir Henry Parkes had suggested to Mr Duncan Gillies the necessity for a federal parliament and executive. Unable to accept the latter's suggestion that New South Wales should give its adhesion to the Federal Council, the former Statesman urged the institution of 'a National Convention for the purpose of devising and reporting upon an adequate scheme of Federal Government'. This led to the Melbourne Conference of 6 February 1890. It was at the banquet of this occasion that, in proposing 'A United Australasia', Mr James Service pointed out that the tariff question was 'a lion in the path', which federationists must either slay or by which they must be slain. In the reply Sir Henry Parkes made use of his historic phrase, 'the crimson thread of kinship runs through us all'. Certain elements of doubt being expressed as to the motives underlying the movement, Sir Henry Parkes said:

> We desire to enter upon this work of Federation without making any condition to the advantage of ourselves, without any stipulation whatever, with a perfect preparedness to leave the proposed convention free to devise its own scheme, and, if a central Parliament comes into existence, with a perfect reliance upon its justice, upon its wisdom, and upon its honour . . . I think . . . an overwhelming majority of my countrymen . . . will approve of the grand step . . . uniting all the colonies under one form of beneficient government, and under one national flag.

The first National Australasian Convention, under Sir Henry Parkes' presidency, was convened on 2 March 1891, all the Australian colonies and New Zealand being represented. The Bill then drafted was considered by the Parliaments of New South Wales, Victoria, South Australia and Tasmania, but not by those of Queensland, Western Australia and New Zealand, and though the parliamentary process of dealing with the matter failed, federal sentiment was strengthening. The collapse of the 'land boom' had made apparent how intimately the interests of the several colonies were related, and the dangers of disunion became impressively obvious. The Australian Natives' Association took up the federal cause with enthusiasm, Federation leagues were established, the issues were widely and intelligently discussed. The unification scheme of Sir George Dibbs helped to make the issue a real one.

At the Conference of Premiers at Hobart on 29 January 1895, it was agreed that Federation 'was the great and pressing question of Australian politics', and that 'the framing of a Federal Constitution' was an urgent duty. The resuscitation of the whole matter led to the passing of Enabling Acts. In New South Wales, the Act received the Royal assent on 23 December 1895; South Australia anticipated this by three days; the Tasmanian Bill was passed on 10 January 1896; the Victorian on 7 March 1896; Western Australia fell into line on 27 October. The 'People's Federal Convention' held at Bathurst, New South Wales, in November 1896, gave a considerable impulse to the movement; to wait longer for Queensland was considered unnecessary, and 4 March 1897 was fixed as the date for the election of federal representatives for New South Wales, Victoria, South Australia and Tasmania. Western Australia followed suit, and on 22 March the representatives met at Adelaide.

The discussions made it evident that the federal point of view had advanced considerably. Constiutional, Finance, and Judiciary Committees were appointed, and a Bill was drafted. This, reported to the Convention on 22 April, was adopted on the following day, and the Convention adjourned until September. The Parliaments of New South Wales, Victoria, South Australia, Tasmania and Western Australia discussed the question before the Sydney Session of the Convention, which opened on 2 September 1897. The business of the Convention involved the general reconsideration of the whole Bill, and the consideration of no less than 286 suggested amendments. This work gave a definite character to that of the Melbourne Session of 1898, extending from 20 January to 17 March, the necessity for reaching a final decision giving weight to its deliberations.

Votes on the question of Federation

Eleven weeks after this last convention the first popular vote was taken on Federation in New South Wales, Victoria, South Australia and Tasmania. Though the decision was overwhelmingly in favour of Federation in three of the States, and there was a distinct majority in its favour in New South Wales, the majority was legally insufficient. On 22 January 1899, the Premiers of the six colonies met at Melbourne in a conference initiated by the Right Honourable G. H. Reid, P.C., and seven amendments were made in the Bill. This step virtually effected the solution of the few outstanding difficulties which could in any way be regarded as fundamental.

On the occasion of the second popular vote, Queensland also joined in. The general majority in favour of Federation was more than doubled, that for New South Wales itself having been more than quadrupled when compared with the first vote. The following table shows the two results.

VOTES FOR AND AGAINST FEDERATION

Votes		*N.S.W.*	*Vic.*	*S.A.*	*Tas.*	*Qld*	*Total*
1st Vote	For Federation	71,595	100,520	35,800	11,797	—	219,712
	Against	66,228	22,099	17,320	2,716	—	108,363
	Majority	5,367	78,421	18,480	9,081	—	111,349
2nd Vote	For Federation	107,420	152,653	65,990	13,437	38,488	377,988
	Against	82,741	9,805	17,053	791	30,996	141,386
	Majority	24,679	142,848	48,937	12,646	7,492	236,602

Enactment of the Constitution

The Secretary of State for the Colonies (the Right Honourable Joseph Chamberlain), expressed the hope on 22 December 1899 that a delegation of the federating colonies would visit England on the occasion of the submission of the Commonwealth Bill to the Imperial Parliament. The delegation consisted of Mr (later Sir) Edmund Barton (N.S.W.), Mr Alfred Deakin (Vic.), Mr C. C. Kingston (S.A.), Sir P. O. Fysh (Tas.), and later Mr S. H. Parker was appointed delegate for Western Australia, and Mr W. P. Reeves for New Zealand. After discussion as to whether there should be some modification in the Bill, it was introduced into the House of Commons on 14 May; the second reading was moved on 21 May; the discussion in committee commenced on 18 June; and the Royal assent was given on 9 July 1900.

On 31 July a referendum in Western Australia on the question of federating gave the result:—For, 44,800; against, 19,691; that is to say, a majority of 25,109 in favour of union. On 21 August both Houses of Parliament in that State passed addresses praying that it might be included as an original State of the Commonwealth.

On 17 September 1900, Her Majesty Queen Victoria signed the proclamation declaring that on and after the first day of January 1901, the people of New South Wales, Victoria, South Australia, Queensland, Tasmania and Western Australia should be united in a federal Commonwealth, under the name of the Commonwealth of Australia.

More detail on the federal movement can be found in *Year Book* No. 1.

The establishment of the Commonwealth of Australia

On 1 January 1901, the designation of 'Colonies'—except in the case of the Northern Territory, to which the designation 'Territory' applied—was changed to that of 'States'.

Transfer of the Northern Territory to the Commonwealth

On 7 December 1907, the Commonwealth and the State of South Australia entered into an agreement for the transfer of the Northern Territory to the Commonwealth, subject to approval by the Parliaments of the Commonwealth and the State. This approval was given by the South Australian Parliament under the *Northern Territory Surrender Act, 1907* and by the Commonwealth Parliament under the *Northern Territory Acceptance Act, 1910.* The Territory was formally transferred to the Commonwealth on 1 January 1911, and became the Northern Territory of Australia.

Transfer of the Australian Capital Territory to the Commonwealth

On 18 October 1909, the Commonwealth and the State of New South Wales entered into an agreement for the surrender to and acceptance by the Commonwealth of an area of 2,359 square kilometres as the Seat of Government of the Commonwealth. In December 1909, Acts were passed by the Commonwealth and New South Wales Parliaments approving the agreement, and on 5 December 1910 a proclamation was issued vesting the Territory in the Commonwealth on and from 1 January 1911.

By the *Jervis Bay Territory Acceptance Act 1915*, an area of 73 square kilometres at Jervis Bay, surrendered by New South Wales according to an agreement made in 1913, was also accepted by the Commonwealth and was transferred as from 4 September 1915.

Composition of Australia

In 1973, the total area of Australia and of the individual States and Territories was determined by the Division of National Mapping as 7,682,300 square kilometres. Some historical dates and the present areas of the several States and Territories and of Australia are shown in the following table.

AUSTRALIA: COMPONENT STATES AND TERRITORIES

State or Territory	*Year of annexation*	*Year of first permanent settlement*	*Year of formation into separate colony or Territory*	*Year in which responsible government was granted*	*Present area in km²*
New South Wales	1770	1788	1786	1855	801,600
Victoria	1770	1834	1851	1855	227,600
Queensland	1770	1824	1859	(*a*) 1859	1,727,200
South Australia	1788	1836	1834	1856	984,000
Western Australia	1829	1829	1829	1890	2,525,000
Tasmania	1788	1803	1825	1855	67,800
Northern Territory	..	..	(*b*) 1863	..	1,346,200
Australian Capital Territory	..	..	(*c*) 1911	..	2,400
Australia	..	..	..	(*d*)	**7,682,300**

(*a*) As part of New South Wales in 1855; as a separate colony in 1859. (*b*) Previously part of New South Wales; brought under the jurisdiction of South Australia in 1863; transferred to the Commonwealth in 1911. (*c*) Previously part of New South Wales. (*d*) Constituted as from 1 January 1901.

The Constitution of the Commonwealth of Australia

Commonwealth Constitution Act

The Commonwealth of Australia Constitution Act, 63 and 64 Vict., Chapter 12, namely: 'An Act to constitute the Commonwealth of Australia', as amended by the *Constitution Alteration (Senate Elections) 1906*, the *Constitution Alteration* (*State Debts*) *1909*, the *Constitution Alteration* (*State Debts*) *1928*, the *Constitution Alteration* (*Social Services*) *1946*, the *Constitution Alteration* (*Aboriginals*) *1967*, the *Constitution Alteration* (*Senate Casual Vacancies*) *1977*, the *Constitution Alteration* (*Retirement of Judges*) *1977*, and the *Constitution Alteration* (*Referendums*) *1977*, follows. The text contains all the alterations of the Constitution made up to and including 1 December 1977.

THE COMMONWEALTH OF AUSTRALIA CONSTITUTION ACT, 63 & 64 VICTORIA, CHAPTER 12

An Act to Constitute the Commonwealth of Australia. [9th July, 1900].

WHEREAS the people of New South Wales, Victoria, South Australia, Queensland and Tasmania, humbly relying on the blessing of Almighty God, have agreed to unite in one indissoluble Federal Commonwealth under the Crown of the United Kingdom of Great Britain and Ireland, and under the Constitution hereby established:

And whereas it is expedient to provide for the admission into the Commonwealth of other Australasian Colonies and possessions of the Queen:

Be it therefore enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:—

1. This Act may be cited as the Commonwealth of Australia Constitution Act.

2. The provisions of this Act referring to the Queen shall extend to Her Majesty's heirs and successors in the sovereignty of the United Kingdom.

3. It shall be lawful for the Queen, with the advice of the Privy Council, to declare by proclamation that, on and after a day therein appointed, not being later than one year after the passing of this Act, the people of New South Wales, Victoria, South Australia, Queensland and Tasmania, and also, if Her Majesty is satisfied that the people of Western Australia have agreed thereto, of Western Australia, shall be united in a Federal Commonwealth under the name of the Commonwealth of Australia. But the Queen may, at any time after the proclamation appoint a Governor-General for the Commonwealth.

4. The Commonwealth shall be established, and the Constitution of the Commonwealth shall take effect, on and after the day so appointed. But the Parliaments of the several colonies may at any time after the passing of this Act make any such laws, to come into operation on the day so appointed, as they might have made if the Constitution had taken effect at the passing of this Act.

5. This Act, and all laws made by the Parliament of the Commonwealth under the Constitution, shall be binding on the courts, judges, and people of every State and of every part of the Commonwealth, notwithstanding anything in the laws of any State; and the laws of the Commonwealth shall be in force on all British ships, the Queen's ships of war excepted, whose first port of clearance and whose port of destination are in the Commonwealth.

6. "The Commonwealth" shall mean the Commonwealth of Australia as established under this Act.

"The States" shall mean such of the colonies of New South Wales, New Zealand, Queensland, Tasmania, Victoria, Western Australia, and South Australia, including the northern territory of South Australia, as for the time being are parts of the Commonwealth, and such colonies or territories as may be admitted into or established by the Commonwealth as States; and each of such parts of the Commonwealth shall be called "a State."

"Original States" shall mean such States as are parts of the Commonwealth at its establishment.

7. The Federal Council of Australasia Act, 1885, is hereby repealed, but so as not to affect any laws passed by the Federal Council of Australasia and in force at the establishment of the Commonwealth.

Any such law may be repealed as to any State by the Parliament of the Commonwealth, or as to any colony not being a State by the Parliament thereof.

8. After the passing of this Act the Colonial Boundaries Act, 1895, shall not apply to any colony which becomes a State of the Commonwealth; but the Commonwealth shall be taken to be a self-governing colony for the purposes of that Act.

9. The Constitution of the Commonwealth shall be as follows:—

THE CONSTITUTION

This Constitution is divided as follows:—

Chapter I.—The Parliament:
  Part I.—General:
  Part II.—The Senate:
  Part III.—The House of Representatives:
  Part IV.—Both Houses of the Parliament:
  Part V.—Powers of the Parliament:
Chapter II.—The Executive Government:
Chapter III.—The Judicature:
Chapter IV.—Finance and Trade:
Chapter V.—The States:
Chapter VI.—New States:
Chapter VII.—Miscellaneous:
Chapter VIII.—Alteration of the Constitution:
  The Schedule.

CHAPTER I—THE PARLIAMENT

PART I—GENERAL

1. The Legislative power of the Commonwealth shall be vested in a Federal Parliament, which shall consist of the Queen, a Senate, and a House of Representatives, and which is herein-after called "The Parliament," or "The Parliament of the Commonwealth".

2. A Governor-General appointed by the Queen shall be Her Majesty's representative in the Commonwealth, and shall have and may exercise in the Commonwealth during the Queen's pleasure, but subject to this Constitution, such powers and functions of the Queen as Her Majesty may be pleased to assign to him.

3. There shall be payable to the Queen out of the Consolidated Revenue fund of the Commonwealth, for the salary of the Governor-General, an annual sum which, until the Parliament otherwise provides, shall be ten thousand pounds.

The salary of a Governor-General shall not be altered during his continuance in office.

4. The provisions of this Constitution relating to the Governor-General extend and apply to the Governor-General for the time being, or such person as the Queen may appoint to administer the Government of the Commonwealth; but no such person shall be entitled to receive any salary from the Commonwealth in respect of any other office during his administration of the Government of the Commonwealth.

5. The Governor-General may appoint such times for holding the sessions of the Parliament as he thinks fit, and may also from time to time, by Proclamation or otherwise, prorogue the Parliament, and may in like manner dissolve the House of Representatives.

After any general election the Parliament shall be summoned to meet not later than thirty days after the day appointed for the return of the writs.

The Parliament shall be summoned to meet not later than six months after the establishment of the Commonwealth.

6. There shall be a session of the Parliament once at least in every year, so that twelve months shall not intervene between the last sitting of the Parliament in one session and its first sitting in the next session.

PART II—THE SENATE

7. The Senate shall be composed of senators for each State, directly chosen by the people of the State, voting, until the Parliament otherwise provides, as one electorate.

But until the Parliament of the Commonwealth otherwise provides, the Parliament of the State of Queensland, if that State be an Original State, may make laws dividing the State into divisions and determining the number of senators to be chosen for each division, and in the absence of such provision the State shall be one electorate.

Until the Parliament otherwise provides there shall be six senators for each Original State. The Parliament may make laws increasing or diminishing the number of senators for each State, but so that equal representation of the several Original States shall be maintained and that no Original State shall have less than six senators.

The senators shall be chosen for a term of six years, and the names of the senators chosen for each State shall be certified by the Governor to the Governor-General.

8. The qualification of electors of senators shall be in each State that which is prescribed by this Constitution, or by the Parliament, as the qualification for electors of members of the House of Representatives; but in the choosing of senators each elector shall vote only once.

9. The Parliament of the Commonwealth may make laws prescribing the method of choosing senators, but so that the method shall be uniform for all the States. Subject to any such law, the Parliament of each State may make laws prescribing the method of choosing the senators for that State.

The Parliament of a State may make laws for determining the times and places of elections of senators for the State.

10. Until the Parliament otherwise provides, but subject to this Constitution, the laws in force in each State, for the time being, relating to elections for the more numerous House of the Parliament of the State shall, as nearly as practicable, apply to elections of senators for the State.

11. The Senate may proceed to the despatch of business, notwithstanding the failure of any State to provide for its representation in the Senate.

12. The Governor of any State may cause writs to be issued for elections of senators for the State. In case of the dissolution of the Senate the writs shall be issued within ten days from the proclamation of such dissolution.

13. As soon as may be after the Senate first meets, and after each first meeting of the Senate following a dissolution thereof, the Senate shall divide the senators chosen for each State into two classes, as nearly equal in number as practicable; and the places of the senators of the first class shall become vacant at the expiration of three years, and the places of those of the second class at the expiration of six years, from the beginning of their term of service; and afterwards the places of senators shall become vacant at the expiration of six years from the beginning of their term of service.

The election to fill vacant places shall be made within one year before the places are to become vacant.

For the purposes of this section the term of service of a senator shall be taken to begin on the first day of July following the day of his election, except in the cases of the first election and of the election next after any dissolution of the Senate, when it shall be taken to begin on the first day of July preceding the day of his election.

14. Whenever the number of senators for a State is increased or diminished, the Parliament of the Commonwealth may make such provision for the vacating of the places of senators for the State as it deems necessary to maintain regularity in the rotation.

15. If the place of a senator becomes vacant before the expiration of his term of service, the Houses of Parliament of the State for which he was chosen, sitting and voting together, or, if there is only one House of that Parliament, that House, shall choose a person to hold the place until the expiration of the term. But if the Parliament of the State is not in session when the vacancy is notified, the Governor of the State, with the advice of the Executive Council thereof, may appoint a person to hold the place until the expiration of fourteen days from the beginning

of the next session of the Parliament of the State or the expiration of the term, whichever first happens.

Where a vacancy has at any time occurred in the place of a senator chosen by the people of a State and, at the time when he was so chosen, he was publicly recognised by a particular political party as being an endorsed candidate of that party and publicly represented himself to be such a candidate, a person chosen or appointed under this section in consequence of that vacancy, or in consequence of that vacancy and a subsequent vacancy or vacancies, shall, unless there is no member of that party available to be chosen or appointed, be a member of that party.

Where—

(a) in accordance with the last preceding paragraph, a member of a particular political party is chosen or appointed to hold the place of a senator whose place had become vacant; and

(b) before taking his seat he ceases to be a member of that party (otherwise than by reason of the party having ceased to exist),

he shall be deemed not to have been so chosen or appointed and the vacancy shall be again notified in accordance with section twenty-one of this Constitution.

The name of any senator chosen or appointed under this section shall be certified by the Governor of the State to the Governor-General.

If the place of a senator chosen by the people of a State at the election of senators last held before the commencement of the *Constitution Alteration (Senate Casual Vacancies) 1977* became vacant before that commencement and, at that commencement, no person chosen by the House or Houses of Parliament of the State, or appointed by the Governor of the State, in consequence of that vacancy, or in consequence of that vacancy and a subsequent vacancy or vacancies, held office, this section applies as if the place of the senator chosen by the people of the State had become vacant after that commencement.

A senator holding office at the commencement of the *Constitution Alteration (Senate Casual Vacancies) 1977*, being a senator appointed by the Governor of a State in consequence of a vacancy that had at any time occurred in the place of a senator chosen by the people of the State, shall be deemed to have been appointed to hold the place until the expiration of fourteen days after the beginning of the next session of the Parliament of the State that commenced or commences after he was appointed and further action under this section shall be taken as if the vacancy in the place of the senator chosen by the people of the State had occurred after that commencement.

Subject to the next succeeding paragraph, a senator holding office at the commencement of the *Constitution Alteration (Senate Casual Vacancies) 1977* who was chosen by the House or Houses or Parliament of a State in consequence of a vacancy that had at any time occurred in the place of a senator chosen by the people of the State shall be deemed to have been chosen to hold office until the expiration of the term of service of the senator elected by the people of the State.

If, at or before the commencement of the *Constitution Alteration (Senate Casual Vacancies) 1977*, a law to alter the Constitution entitled "*Constitution Alteration (Simultaneous Elections) 1977*" came into operation, a senator holding office at the commencement of that law who was chosen by the House or Houses of Parliament of a State in consequence of a vacancy that had at any time occurred in the place of a senator chosen by the people of the State shall be deemed to have been chosen to hold office—

(a) if the senator elected by the people of the State had a term of service expiring on the thirtieth day of June, One thousand nine hundred and seventy-eight—until the expiration or dissolution of the first House of Representatives to expire or be dissolved after that law came into operation; or

(b) if the senator elected by the people of the State had a term of service expiring on the thirtieth day of June, One thousand nine hundred and eighty-one—until the expiration or dissolution of the second House of Representatives to expire or be dissolved after that law come into operation or, if there is an earlier dissolution of the Senate, until that dissolution.

16. The qualifications of a senator shall be the same as those of a member of the House of Representatives.

17. The Senate shall, before proceeding to the despatch of any other business, choose a senator to be the President of the Senate; and as often as the office of President becomes vacant the Senate shall again choose a senator to be the President.

The President shall cease to hold his office if he ceases to be a senator. He may be removed from office by a vote of the Senate, or he may resign his office or his seat by writing addressed to the Governor-General.

18. Before or during any absence of the President, the Senate may choose a senator to perform his duties in his absence.

19. A senator may, by writing addressed to the President, or to the Governor-General if there is no President or if the President is absent from the Commonwealth, resign his place, which thereupon shall become vacant.

20. The place of a senator shall become vacant if for two consecutive months of any session of the Parliament he, without the permission of the Senate, fails to attend the Senate.

21. Whenever a vacancy happens in the Senate, the President, or if there is no President or if the President is absent from the Commonwealth the Governor-General, shall notify the same to the Governor of the State in the representation of which the vacancy has happened.

22. Until the Parliament otherwise provides, the presence of at least one-third of the whole number of the senators shall be necessary to constitute a meeting of the Senate for the exercise of its powers.

23. Questions arising in the Senate shall be determined by a majority of votes, and each senator shall have one vote. The President shall in all cases be entitled to a vote; and when the votes are equal the question shall pass in the negative.

PART III—THE HOUSE OF REPRESENTATIVES

24. The House of Representatives shall be composed of members directly chosen by the people of the Commonwealth, and the number of such members shall be, as nearly as practicable, twice the number of the senators.

The number of members chosen in the several States shall be in proportion to the respective numbers of their people, and shall, until the Parliament otherwise provides, be determined, whenever necessary, in the following manner:—

(i) A quota shall be ascertained by dividing the number of the people of the Commonwealth, as shown by the latest statistics of the Commonwealth, by twice the number of the senators;

(ii) The number of members to be chosen in each State shall be determined by dividing the number of the people of the State, as shown by the latest statistics of the Commonwealth, by the quota; and if on such division there is a remainder greater than one-half of the quota, one more remember shall be chosen in the State.

But notwithstanding anything in this section, five members at least shall be chosen in each Original State.

25. For the purposes of the last section, if by the law of any State all persons of any race are disqualified from voting at elections for the more numerous House of the Parliament of the State, then, in reckoning the number of the people of the State or of the Commonwealth, persons of that race resident in that State shall not be counted.

26. Notwithstanding anything in section twenty-four, the number of members to be chosen in each State at the first election shall be as follows:—

New South Wales	23	South Australia	6
Victoria	20	Tasmania	5
Queensland	8		

Provided that if Western Australia is an original State, the numbers shall be as follows:—

New South Wales	26	South Australia	7
Victoria	23	Western Australia	5
Queensland	9	Tasmania	5

27. Subject to this Constitution, the Parliament may make laws for increasing or diminishing the number of the members of the House of Representatives.

28. Every House of Representatives shall continue for three years from the first meeting of the House, and no longer, but may be sooner dissolved by the Governor-General.

29. Until the Parliament of the Commonwealth otherwise provides, the Parliament of any State may make laws for determining the divisions in each State for which members of the House of Representatives may be chosen, and the number of members to be chosen for each division. A division shall not be formed out of parts of different States.

In the absence of other provisions, each State shall be one electorate.

30. Until the Parliament otherwise provides, the qualification of electors of members of the House of Representatives shall be in each State that which is prescribed by the law of the State as the qualification of electors of the more numerous House of Parliament of the State; but in the choosing of members each elector shall vote only once.

31. Until the Parliament otherwise provides, but subject to this Constitution, the laws in force in each State for the time being relating to elections for the more numerous House of the Parliament of the State shall, as nearly as practicable, apply to elections in the State of members of the House of Representatives.

32. The Governor-General in Council may cause writs to be issued for general elections of members of the House of Representatives.

After the first general election, the writs shall be issued within ten days from the expiry of a House of Representatives or from the proclamation of a dissolution thereof.

33. Whenever a vacancy happens in the House of Representatives, the Speaker shall issue his writ for the election of a new member, or if there is no Speaker or if he is absent from the Commonwealth the Governor-General in Council may issue the writ.

34. Until the Parliament otherwise provides, the qualifications of a member of the House of Representatives shall be as follows:—

(i) He must be of the full age of twenty-one years, and must be an elector entitled to vote at the election of members of the House of Representatives, or a person qualified to become such elector, and must have been for three years at the least a resident within the limits of the Commonwealth as existing at the time when he is chosen:

(ii) He must be a subject of the Queen, either natural-born or for at least five years naturalized under a law of the United Kingdom, or of a Colony which has become or becomes a State, or of the Commonwealth, or of a State.

35. The House of Representatives shall, before proceeding to the despatch of any other business, choose a member to be the Speaker of the House, and as often as the office of Speaker becomes vacant the House shall again choose a member to be the Speaker.

The Speaker shall cease to hold his office if he ceases to be a member. He may be removed from office by a vote of the House, or he may resign his office or his seat by writing addressed to the Governor-General.

36. Before or during any absence of the Speaker, the House of Representatives may choose a member to perform his duties in his absence.

37. A member may by writing addressed to the Speaker, or to the Governor-General if there is no Speaker or if the Speaker is absent from the Commonwealth, resign his place, which thereupon shall become vacant.

38. The place of a member shall become vacant if for two consecutive months of any session of the Parliament he, without the permission of the House, fails to attend the House.

39. Until the Parliament otherwise provides, the presence of at least one-third of the whole number of the members of the House of Representatives shall be necessary to constitute a meeting of the House for the exercise of its powers.

40. Questions arising in the House of Representatives shall be determined by a majority of votes other than that of the Speaker. The Speaker shall not vote unless the numbers are equal, and then he shall have a casting vote.

PART IV—BOTH HOUSES OF THE PARLIAMENT

41. No adult person who has or acquires a right to vote at elections for the more numerous House of the Parliament of a State shall, while the right continues, be prevented by any law of the Commonwealth from voting at elections for either House of the Parliament of the Commonwealth.

42. Every senator and every member of the House of Representatives shall before taking his seat make and subscribe before the Governor-General, or some person authorised by him, an oath or affirmation of allegiance in the form set forth in the schedule to this Constitution.

43. A member of either House of the Parliament shall be incapable of being chosen or of sitting as a member of the other House.

44. Any person who—

(i) Is under any acknowledgment of allegiance, obedience, or adherence, to a foreign power, or is a subject or a citizen or entitled to the rights or privileges of a subject or a citizen of a foreign power: or

(ii) Is attainted of treason, or has been convicted and is under sentence, or subject to be sentenced, for any offence punishable under the law of the Commonwealth or of a State by imprisonment for one year or longer: or

(iii) Is an undischarged bankrupt or insolvent: or

(iv) Holds any office of profit under the Crown, or any pension payable during the pleasure of the Crown out of any of the revenues of the Commonwealth: or

(v) Has any direct or indirect pecuniary interest in any agreement with the Public Service of the Commonwealth otherwise than as a member and in common with the other members of an incorporated company consisting of more than twenty-five persons:

shall be incapable of being chosen or of sitting as a senator or a member of the House of Representatives.

But sub-section (iv) does not apply to the office of any of the Queen's Ministers of State for the Commonwealth, or of any of the Queen's Ministers for a State, or to the receipt of pay, half pay, or a pension, by any person as an officer or member of the Queen's navy or army, or to the receipt of pay as an officer or member of the naval or military forces of the Commonwealth by any person whose services are not wholly employed by the Commonwealth.

45. If a senator or member of the House of Representatives—

(i) Becomes subject to any of the disabilities mentioned in the last preceding section: or

(ii) Takes the benefit, whether by assignment, composition, or otherwise, of any law relating to bankrupt or insolvent debtors: or

(iii) Directly or indirectly takes or agrees to take any fee or honorarium for services rendered to the Commonwealth, or for services rendered in the Parliament to any person or State:

his place shall thereupon become vacant.

46. Until the Parliament otherwise provides, any person declared by this Constitution to be incapable of sitting as a senator or as a member of the House of Representatives shall, for every day on which he so sits, be liable to pay the sum of one hundred pounds to any person who sues for it in any court of competent jurisdiction.

47. Until the Parliament otherwise provides, any question respecting the qualification of a senator or of a member of the House of Representatives, or respecting a vacancy in either House of the Parliament, and any question of a disputed election to either House, shall be determined by the House in which the question arises.

48. Until the Parliament otherwise provides, each senator and each of the House of Representatives shall receive an allowance of four hundred pounds a year, to be reckoned from the day on which he takes his seat.

49. The powers, privileges, and immunities of the Senate and of the House of Representatives, and of the members and the committees of each House, shall be such as are declared by the Parliament, and until declared shall be those of the Commons House of Parliament of the United Kingdom, and of its members and committees, at the establishment of the Commonwealth.

50. Each House of the Parliament may make rules and orders with respect to—

(i) The mode in which its powers, privileges, and immunities may be exercised and upheld:

(ii) The order and conduct of its business and proceedings either separately or jointly with the other House.

PART V—POWERS OF PARLIAMENT

51. The Parliament shall, subject to this constitution, have power to make laws for the peace, order, and good government of the Commonwealth with respect to:

(i) Trade and commerce with other countries, and among the States:

(ii) Taxation; but so as not to discriminate between States or parts of States:

(iii) Bounties on the production or export of goods, but so that such bounties shall be uniform throughout the Commonwealth:

(iv) Borrowing money on the public credit of the Commonwealth:

(v) Postal, telegraphic, telephonic, and other like services:

(vi) The naval and military defence of the Commonwealth and of the several States, and the control of the forces to execute and maintain the laws of the Commonwealth:

(vii) Lighthouses, lightships, beacons and buoys:

(viii) Astronomical and meteorological observations:

(ix) Quarantine:

(x) Fisheries in Australian waters beyond territorial limits:

(xi) Census and statistics:

(xii) Currency, coinage, and legal tender:

(xiii) Banking, other than State banking; also State banking extending beyond the limits of the State concerned, the incorporation of banks, and the issue of paper money:

(xiv) Insurance, other than State insurance; also State insurance extending beyond the limits of the State concerned:

(xv) Weights and measures:

(xvi) Bills of exchange and promissory notes:

(xvii) Bankruptcy and insolvency:

(xviii) Copyrights, patents of inventions and designs, and trade marks:

(xix) Naturalization and aliens:

(xx) Foreign corporations, and trading or financial corporations formed within the limits of the Commonwealth:

(xxi) Marriage:

(xxii) Divorce and matrimonial causes; and in relation thereto, parental rights, and the custody and guardianship of infants:

(xxiii) Invalid and old-age pensions:

(xxiii) The provision of maternity allowances, widows' pensions, child endowment, unemployment, pharmaceutical, sickness and hospital benefits, medical and dental services (but not so as to authorize any form of civil conscription), benefits to students and family allowances:

(xxiv) The service and execution throughout the Commonwealth of the civil and criminal process and the judgements of the courts of the States:

(xxv) The recognition throughout the Commonwealth of the laws, the public Acts and records, and the judicial proceedings of the States:

(xxvi) The people of any race, for whom it is deemed necessary to make special laws:

(xxvii) Immigration and emigration:

(xxviii) The influx of criminals:

(xxix) External affairs:

(xxx) The relations of the Commonwealth with the islands of the Pacific:

(xxxi) The acquisition of property on just terms from any State or person for any purpose in respect of which the Parliament has power to make laws:

(xxxii) The control of railways with respect to transport for the naval and military purposes of the Commonwealth:

(xxxiii) The acquisition, with the consent of a State, of any railways of the State on terms arranged between the Commonwealth and the State:

(xxxiv) Railway construction and extension in any State with the consent of that State:

(xxxv) Conciliation and arbitration for the prevention and settlement of industrial disputes extending beyond the limits of any one State:

(xxxvi) Matters in respect of which this Constitution makes provision until the Parliament otherwise provides:

(xxxvii) Matters referred to the Parliament of the Commonwealth by the Parliament or Parliaments of any State or States, but so that the law shall extend only to States by whose Parliaments the matter is referred, or which afterwards adopt the law:

(xxxviii) The exercise within the Commonwealth, at the request or with the concurrence of the Parliaments of all the States directly concerned, of any power which can at the establishment of this Constitution be exercised only by the Parliament of the United Kingdom or by the Federal Council of Australasia:

(xxxix) Matters incidental to the execution of any power vested by this Constitution in the Parliament or in either House thereof, or in the Government of the Commonwealth, or in the Federal Judicature, or in any Department or officer of the Commonwealth.

52. The Parliament shall, subject to this Constitution, have exclusive power to make laws for the peace, order, and good government of the Commonwealth with respect to—

(i) The seat of government of the Commonwealth, and all places acquired by the Commonwealth for public purposes:

(ii) Matters relating to any department of the public service the control of which is by this Constitution transferred to the Executive Government of the Commonwealth:

(iii) Other matters declared by this Constitution to be within the exclusive power of the Parliament.

53. Proposed laws appropriating revenue or moneys, or imposing taxation, shall not originate in the Senate. But a proposed law shall not be taken to appropriate revenue or moneys, or to impose taxation, by reason only of its containing provisions for the imposition or appropriation of fines or other pecuniary penalties, or for the demand or payment or appropriation of fees for licences, or fees for services under the proposed law. The Senate may not amend proposed laws imposing taxation, or proposed laws appropriating revenue or moneys for the ordinary annual services of the Government.

The Senate may not amend any proposed law so as to increase any proposed charge or burden on the people.

The Senate may at any stage return to the House of Representatives any proposed law which the Senate may not amend, requesting, by message, the omission or amendment of any items or provisions therein. And the House of Representatives may, if it thinks fit, make any of such omissions or amendments, with or without modifications.

Except as provided in this section, the Senate shall have equal power with the House of Representatives in respect of all proposed laws.

54. The proposed law which appropriates revenue or moneys for the ordinary annual services of the Government shall deal only with such appropriation.

55. Laws imposing taxation shall deal only with the imposition of taxation, and any provision therein dealing with any other matter shall be of no effect.

Laws imposing taxation, except laws imposing duties of customs or of excise, shall deal with one subject of taxation only; but laws imposing duties of customs shall deal with duties of customs only, and laws imposing duties of excise shall deal with duties of excise only.

56. A vote, resolution, or proposed law for the appropriation of revenue of moneys shall not be passed unless the purpose of the appropriation has in the same session been recommended by message of the Governor-General to the House in which the proposal originated.

57. If the House of Representatives passes any proposed law, and the Senate rejects or fails to pass it, or passes it with amendments to which the House of Representatives will not agree, and if after an interval of three months the House of Representatives, in the same or the next session, again passes the proposed law with or without any amendments which have been made, suggested, or agreed to by the Senate, and the Senate rejects or fails to pass it, or passes it with amendments to which the House of Representatives will not agree, the Governor-General may dissolve the Senate and the House of Representatives simultaneously. But such dissolution shall not take place within six months before the date of the expiry of the House of Representatives by effluxion of time.

If after such dissolution the House of Representatives again passes the proposed law, with or without any amendments which have been made, suggested, or agreed to by the Senate, and the Senate rejects or fails to pass it, or passes it with amendments to which the House of Representatives will not agree, the Governor-General may convene a joint sitting of the members of the Senate and the House of Representatives.

The members present at the joint sitting may deliberate and shall vote together upon the proposed law as last proposed by the House of Representatives, and upon amendments, if any, which have been made therein by one House and not agreed to by the other, and any such amendments which are affirmed by an absolute majority of the total number of the members of the Senate and the House of Representatives shall be taken to have been carried, and if the proposed law, with the amendments, if any, so carried is affirmed by an absolute majority of the total number of the members of the Senate and House of Representatives, it shall be taken to have been duly passed by both Houses of the Parliament, and shall be presented to the Governor-General for the Queen's assent.

58. When a proposed law passed by both Houses of the Parliament is presented to the Governor-General for the Queen's assent, he shall declare, according to his discretion, but subject to this Constitution, that he assents in the Queen's name, or that he withholds assent, or that he reserves the law for the Queen's pleasure.

The Governor-General may return to the House in which it originated any proposed law so presented to him, and may transmit therewith any amendments which he may recommend, and the Houses may deal with the recommendation.

59. The Queen may disallow any law within one year from the Governor-General's assent, and such disallowance on being made known by the Governor-General by speech or message to each of the Houses of the Parliament, or by Proclamation, shall annul the law from the day when the disallowance is so made known.

60. A proposed law reserved for the Queen's pleasure shall not have any force unless and until within two years from the day on which it was presented to the Governor-General for the Queen's assent the Governor-General makes known, by speech or message to each of the Houses of the Parliament, or by Proclamation, that it has received the Queen's assent.

CHAPTER II—THE EXECUTIVE GOVERNMENT

61. The executive power of the Commonwealth is vested in the Queen and is exercisable by the Governor-General as the Queen's representative, and extends to the execution and maintenance of this Constitution, and of the laws of the Commonwealth.

62. There shall be a Federal Executive Council to advise the Governor-General in the government of the Commonwealth, and the members of the Council shall be chosen and summoned by the Governor-General and sworn as Executive Councillors, and shall hold office during his pleasure.

63. The provisions of this Constitution referring to the Governor-General in Council shall be construed as referring to the Governor-General acting with the advice of the Federal Executive Council.

64. The Governor-General may appoint officers to administer such departments of State of the Commonwealth as the Governor-General in Council may establish.

Such officers shall hold office during the pleasure of the Governor-General. They shall be members of the Federal Executive Council, and shall be the Queen's Ministers of State for the Commonwealth.

After the first general election no Minister of State shall hold office for a longer period than three months unless he is or becomes a senator or a member of the House of Representatives.

65. Until the Parliament otherwise provides, the Ministers of State shall not exceed seven in number, and shall hold such offices as the Parliament prescribes, or, in the absence of provision, as the Governor-General directs.

66. There shall be payable to the Queen, out of the Consolidated Revenue Fund of the Commonwealth, for the salaries of the Ministers of State, an annual sum which, until the Parliament otherwise provides, shall not exceed twelve thousand pounds a year.

67. Until the Parliament otherwise provides, the appointment and removal of all other officers of the Executive Government of the Commonwealth shall be vested in the Governor-General in Council, unless the appointment is delegated by the Governor-General in Council or by a law of the Commonwealth to some other authority.

68. The command in chief of the naval and military forces of the Commonwealth is vested in the Governor-General as the Queen's representative.

69. On a date or dates to be proclaimed by the Governor-General after the establishment of the Commonwealth the following departments of the public service in each State shall become transferred to the Commonwealth:—

Posts, telegraphs, and telephones:
Naval and military defence:
Lighthouses, lightships, beacons, and buoys:
Quarantine.

But the departments of customs and of excise in each State shall become transferred to the Commonwealth on its establishment.

70. In respect of matters which, under this Constitution, pass to the Executive Government of the Commonwealth, all powers and functions which at the establishment of the Commonwealth are vested in the Governor of a Colony, or in the Governor of a Colony with the advice of his Executive Council, or in any authority of a Colony, shall vest in the Governor-General, or in the Governor-General in Council, or in the authority exercising similar powers under the Commonwealth, as the case requires.

CHAPTER III—THE JUDICATURE

71. The judicial power of the Commonwealth shall be vested in a Federal Supreme Court, to be called the High Court of Australia, and in such other federal courts as the Parliament creates, and in such other courts as it invests with federal jurisdiction. The High Court shall consist of a Chief Justice, and so many other Justices, not less than two, as the Parliament prescribes.

72. The Justices of the High Court and of the other courts created by the Parliament—

(i) Shall be appointed by the Governor-General in Council:

(ii) Shall not be removed except by the Governor-General in Council, on an address from both Houses of the Parliament in the same session, praying for such removal on the ground of proved misbehaviour or incapacity:

(iii) Shall receive such remuneration as the Parliament may fix; but the remuneration shall not be diminished during continuance in office.

The appointment of a Justice of the High Court shall be for a term expiring upon his attaining the age of seventy years, and a person shall not be appointed as a Justice of the High Court if he has attained that age.

The appointment of a Justice of a court created by the Parliament shall be for a term expiring upon his attaining the age that is, at the time of his appointment, the maximum age for Justices of that court and a person shall not be appointed as a Justice of such a court if he has attained the age that is for the time being the maximum age for Justices of that court.

Subject to this section, the maximum age for Justices of any court created by the Parliament is seventy years.

The Parliament may make a law fixing an age that is less than seventy years as the maximum age for Justices of a court created by the Parliament and may at any time repeal or amend such a law, but any such repeal or amendment does not affect the term of office of a Justice under an appointment made before the repeal or amendment.

A Justice of the High Court or of a court created by the Parliament may resign his office by writing under his hand delivered to the Governor-General.

Nothing in the provisions added to this section by the *Constitution Alteration (Retirement of Judges) 1977* affects the continuance of a person in office as a Justice of a court under an appointment made before the commencement of those provisions.

A reference in this section to the appointment of a Justice of the High Court or of a court created by the Parliament shall be read as including a reference to the appointment of a person who holds office as a Justice of the High Court or of a court created by the Parliament to another office of Justice of the same court having a different status or designation.

73. The High Court shall have jurisdiction, with such exceptions and subject to such regulations as the Parliament prescribes, to hear and determine appeals from all judgments, decrees, orders, and sentences—

(i) Of any Justice or Justices exercising the original jurisdiction of the High Court:

(ii) Of any other federal court, or court exercising federal jurisdiction; or of the Supreme Court of any State, or of any other court of any State from which at the establishment of the Commonwealth an appeal lies to the Queen in Council:

(iii) Of the Inter-State Commission, but as to questions of law only:

and the judgment of the High Court in all such cases shall be final and conclusive.

But no exception or regulation prescribed by the Parliament shall prevent the High Court from hearing and determining any appeal from the Supreme court of a State in any matter in which at the establishment of the Commonwealth an appeal lies from such Supreme Court to the Queen in Council.

Until the Parliament otherwise provides, the conditions of and restrictions on appeals to the Queen in Council from the Supreme Courts of the several States shall be applicable to appeals from them to the High Court.

74. No appeal shall be permitted to the Queen in Council from a decision of the High Court upon any question, howsoever arising, as to the limits inter se of the Constitutional powers of the Commonwealth and those of any State or States, or as to the limits inter se of the Constitutional powers of any two or more States, unless the High Court shall certify that the question is one which ought to be determined by Her Majesty in Council.

The High Court may so certify if satisfied that for any special reason the certificate should be granted, and thereupon an appeal shall lie to Her Majesty in Council on the question without further leave.

Except as provided in this section, this Constitution shall not impair any right which the Queen may be pleased to exercise by virtue of Her Royal prerogative to grant special leave of appeal from the High Court to her Majesty in Council. The Parliament may make laws limiting the matters in which such leave may be asked, but proposed laws containing any such limitation shall be reserved by the Governor-General for Her Majesty's pleasure.

75. In all matters—

(i) Arising under any treaty:

(ii) Affecting consuls or other representatives of other countries:

(iii) In which the Commonwealth, or a person suing or being sued on behalf of the Commonwealth, is a party:

The Australian Coat of Arms in Court Room 2 of the Australian High Court, Canberra, Australian Capital Territory.

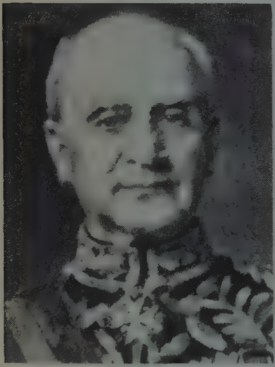
Rt Hon. John Adrian Louis,
Earl of Hopetoun,
P.C., K.T., G.C.M.G., G.C.V.O.
1901-1903

Rt Hon. Hallam,
Baron Tennyson,
P.C., G.C.M.G.
1903-1904

Rt Hon. Henry Stafford,
Baron Northcote,
P.C., G.C.M.G., G.C.I.E., C.B.
1904-1908

Rt Hon. William Humble,
Earl of Dudley,
P.C., G.C.B., G.C.M.G., G.C.V.O.
1908-1911

THE GOVERNORS-G



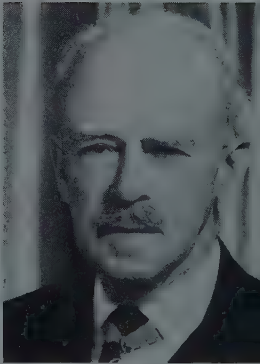
Rt Hon. Sir Isaac Alfred Isaacs,
G.C.B., G.C.M.G., K.C.
1931-1936

Brigadier-General the Rt Hon.
Alexander Gore Arkwright,
Baron Gowrie,
V.C., P.C., G.C.M.G., C.B., D.S.O., K.G.St.J.
1936-1945

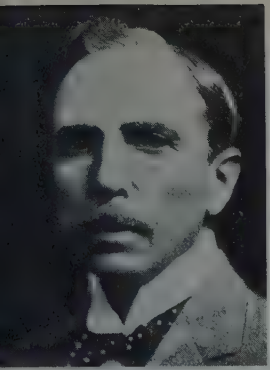
Field Marshal Sir William Joseph Slim,
K.G., G.C.B., G.C.M.G.,
G.C.V.O., G.B.E., D.S.O., M.C., K.St.J.
1953-1960

Rt Hon. William Shepherd,
Viscount Dunrossil,
P.C., G.C.M.G., M.C., K.St.J., Q.C.
1960-1961

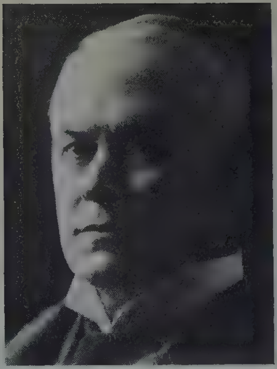
Rt Hon. William Philip,
Viscount De Lisle,
V.C., P.C., G.C.M.G., G.C.V.O., K.St.J.
1961-1965



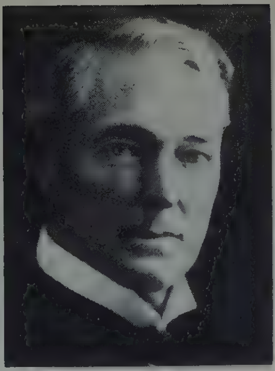
Rt Hon. Richard Gardiner,
Baron Casey,
K.G., P.C., G.C.M.G., C.H., D.S.O., M.C., K.S
1965-1969



Rt Hon. Thomas,
Baron Denman,
P.C., G.C.M.G., K.C.V.O.
1911-1914



Rt Hon. Sir Ronald
Craufurd Munro-Ferguson,
G.C.M.G.
1914-1920



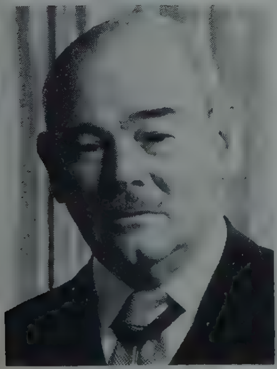
Rt Hon. Henry William,
Baron Forster of Lepe,
P.C., G.C.M.G.
1920-1925

Rt Hon. John Lawrence,
Baron Stonehaven,
P.C., G.C.M.G., D.S.O.
1925-1931

RAL OF AUSTRALIA

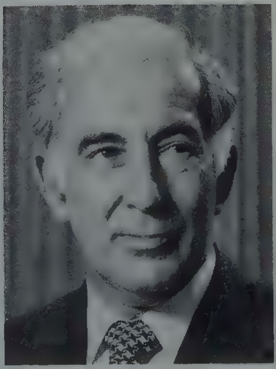
His Royal Highness Prince Henry
William Frederick Albert,
Duke of Gloucester,
K.G.,P.C.,K.T.,K.P.,G.C.B.,G.C.M.G.,G.C.V.O.
1945-1947

Rt Hon. Sir William John McKell,
G.C.M.G., Q.C.
1947-1953



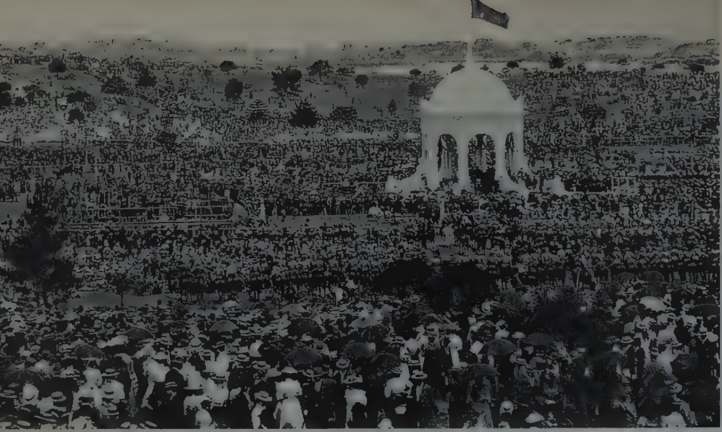
Rt Hon. Sir Paul Hasluck,
G.C.M.G., G.C.V.O., K.St.J.
1969-1974

Rt Hon. Sir John Robert Kerr,
A.K., G.C.M.G., K.St.J., Q.C.
1974-1977



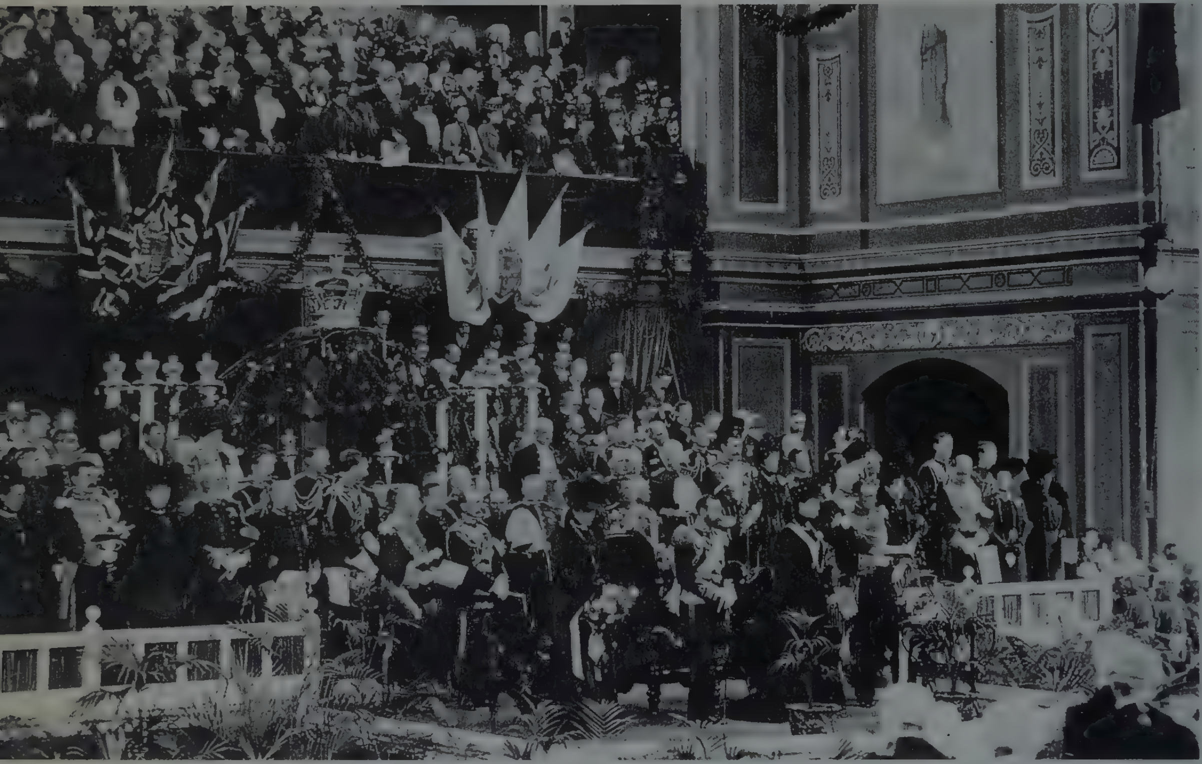
Rt Hon. Sir Zelman Cowan,
A.K., G.C.M.G., G.C.V.O., K.St.J., Q.C.
1977-1982

Rt Hon. Sir Ninian Stephen,
A.K., G.C.M.G., G.C.V.O., K.B.E.
1982-

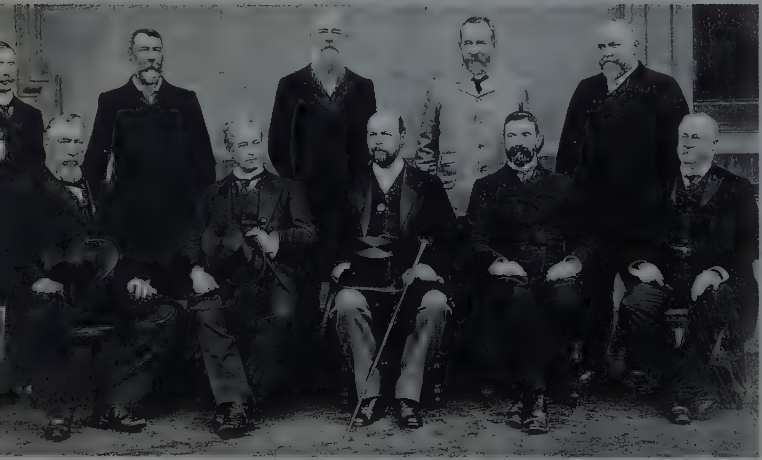


The scene in Centennial Park, Sydney, on 1 January 1901, when Australia became a Federation.

Scene at the Exhibition Building, Melbourne, on 9 May 1901, when the Parliament of the Commonwealth of Australia was opened by the Duke of Cornwall and York (later King George V).



Photographs— Promotion Australia



The Barton Ministry showing members of the first Federal Cabinet, From left to right, standing, Senator the Hon. J. G. Drake, Senator the Hon. R. E. O'Connor, Vice-president of the Executive Council, the Hon. Sir P. O. Fysh, Honorary Minister, the Hon. C. C. Kingston, Trade and Customs, the Hon. Sir John Forrest, Postmaster-General. Seated, the Hon. Sir W. J. Lyne, Home Affairs, the Rt. Hon. Edmund Barton, Prime Minister and Minister for External Affairs, Lord Tennyson, Governor-General, the Hon. A. Deakin, Attorney-General, the Hon. Sir George Turner, Treasurer.

Sir J. R. Dickson, Minister for Defence and the Hon. Neil Lewis, Honorary Minister are not shown.

(iv) Between States, or between residents of different States, or between a State and a resident of another State:

(v) In which a writ of Mandamus or prohibition or an injunction is sought against an officer of the Commonwealth:

the High Court shall have original jurisdiction.

76. The Parliament may make laws conferring original jurisdiction on the High Court in any matter—

(i) Arising under this Constitution, or involving its interpretation:

(ii) Arising under any laws made by the Parliament:

(iii) Of Admiralty and maritime jurisdiction:

(iv) Relating to the same subject-matter claimed under the laws of different States.

77. With respect to any of the matters mentioned in the last two sections the Parliament may make laws—

(i) Defining the jurisdiction of any federal court other than the High Court;

(ii) Defining the extent to which the jurisdiction of any federal court shall be exclusive of that which belongs to or is invested in the courts of the States:

(iii) Investing any court of a State with federal jurisdiction.

78. The Parliament may make laws conferring rights to proceed against the Commonwealth or a State in respect of matters within the limits of the judicial power.

79. The federal jurisdiction of any court may be exercised by such number of judges as the Parliament prescribes.

80. The trial on indictment of any offence against any law of the Commonwealth shall be by jury, and every such trial shall be held in the State where the offence was committed, and if the offence was not committed within any State the trial shall be held at such place or places as the Parliament prescribes.

CHAPTER IV—FINANCE AND TRADE

81. All revenues or moneys raised or received by the Executive Government of the Commonwealth shall form one Consolidated Revenue Fund, to be appropriated for the purposes of the Commonwealth in the manner and subject to the charges and liabilities imposed by this Constitution.

82. The costs, charges, and expenses incident to the collection, management, and receipt of the Consolidated Revenue Fund shall form the first charge thereon; and the revenue of the Commonwealth shall in the first instance be applied to the payment of the expenditure of the Commonwealth.

83. No money shall be drawn from the Treasury of the Commonwealth except under appropriation made by law.

But until the expiration of one month after the first meeting of the Parliament the Governor-General in Council may draw from the Treasury and expend such moneys as may be necessary for the maintenance of any department transferred to the Commonwealth and for the holding of the first elections for the Parliament.

84. When any department of the public service of a State becomes transferred to the Commonwealth, all officers of the department shall become subject to the control of the Executive Government of the Commonwealth.

Any such officer who is retained in the service of the Commonwealth shall preserve all his existing and accruing rights, and shall be entitled to retire from that office at the time, and on the pension or retiring allowance, which would be permitted by the law of the State if his service with the Commonwealth were a continuation of his service with the State. Such pension or retiring allowance shall be paid to him by the Commonwealth; but the State shall pay to the Commonwealth a part thereof, to be calculated on the proportion which his term of service with the State bears to his whole term of service, and for the purpose of the calculation his salary shall be taken to be that paid to him by the State at the time of the transfer.

Any officer who is, at the establishment of the Commonwealth, in the public service of a State, and who is, by consent of the Governor of the State with the advice of the Executive Council thereof, transferred to the public service of the Commonwealth, shall have the same rights as if he had been an officer of a department transferred to the Commonwealth and were retained in the service of the Commonwealth.

85. When any department of the public service of a State is transferred to the Commonwealth—

(i) All property of the State of any kind, used exclusively in connexion with the department, shall become vested in the Commonwealth; but, in the case of the departments controlling customs and excise and bounties, for such time only as the Governor-General in Council may declare to be necessary:

(ii) The Commonwealth may acquire any property of the State, of any kind used, but not exclusively used in connexion with the department; the value thereof shall, if no agreement can be made, be ascertained in, as nearly as may be, the manner in which the value of land, or of an interest in land, taken by the State for public purposes is ascertained under the law of the State in force at the establishment of the Commonwealth:

(iii) The Commonwealth shall compensate the State for the value of any property passing to the Commonwealth under this section; if no agreement can be made as to the mode of compensation, it shall be determined under laws to be made by the Parliament:

(iv) The Commonwealth shall, at the date of the transfer, assume the current obligations of the State in respect of the department transferred.

86. On the establishment of the Commonwealth, the collection and control of duties of customs and of excise, and the control of the payment of bounties, shall pass to the Executive Government of the Commonwealth.

87. During a period of ten years after the establishment of the Commonwealth and thereafter until the Parliament otherwise provides, of the net revenue of the Commonwealth from duties of customs and of excise not more than one-fourth shall be applied annually by the Commonwealth towards its expenditure.

The balance shall, in accordance with this Constitution, be paid to the several States, or applied towards the payment of interest on debts of the several States taken over by the Commonwealth.

88. Uniform duties of customs shall be imposed within two years after the establishment of the Commonwealth.

89. Until the imposition of uniform duties of customs—

(i) The Commonwealth shall credit to each State the revenues collected therein by the Commonwealth.

(ii) The Commonwealth shall debit to each State—

(*a*) The expenditure therein of the Commonwealth incurred solely for the maintenance or continuance, as at the time of transfer, of any department transferred from the State to the Commonwealth;

(*b*) The proportion of the State, according to the number of its people, in the other expenditure of the Commonwealth.

(iii) The Commonwealth shall pay to each State month by month the balance (if any) in favour of the State.

90. On the imposition of uniform duties of customs the power of the Parliament to impose duties of customs and of excise, and to grant bounties on the production or export of goods, shall become exclusive.

On the imposition of uniform duties of customs all laws of the several States imposing duties of customs or of excise, or offering bounties on the production or export of goods, shall cease to have effect, but any grant of or agreement for any such bounty lawfully made by or under the authority of the Government of any State shall be taken to be good if made before the thirtieth day of June, one thousand eight hundred and ninety-eight, and not otherwise.

91. Nothing in this Constitution prohibits a State from granting any aid to or bounty on mining for gold, silver, or other metals, nor from granting, with the consent of both Houses of the Parliament of the Commonwealth expressed by resolution, any aid or bounty on the production or export of goods.

92. On the imposition of uniform duties of customs, trade, commerce, and intercourse among the States, whether by means of internal carriage or ocean navigation, shall be absolutely free.

But notwithstanding anything in this Constitution, goods imported before the imposition of uniform duties of customs into any State, or into any Colony which, whilst the goods remain therein, becomes a State, shall, on thence passing into another State within two years after the imposition of such duties, be liable to any duty chargeable on the importation of such goods into the Commonwealth, less any duty paid in respect of the goods on their importation.

93. During the first five years after the imposition of uniform duties of customs, and thereafter until the Parliament otherwise provides—

(i) The duties of customs chargeable on goods imported into a State and afterwards passing into another State for consumption, and the duties of excise paid on goods produced or manufactured in a State and afterwards passing into another State for consumption, shall be taken to have been collected not in the former but in the latter State;

(ii) Subject to the last subsection, the Commonwealth shall credit revenue, debit expenditure, and pay balances to the several States as prescribed for the period preceding the imposition of uniform duties of customs.

94. After five years from the imposition of uniform duties of customs, the Parliament may provide, on such basis as it deems fair for the monthly payment to the several States of all surplus revenue of the Commonwealth.

95. Notwithstanding anything in this Constitution, the Parliament of the State of Western Australia, if that State be an Original State, may, during the first five years after the imposition of uniform duties of customs, impose duties of customs on goods passing into that State and not originally imported beyond the limits of the Commonwealth; and such duties shall be collected by the Commonwealth.

But any duty so imposed on any goods shall not exceed during the first of such years the duty chargeable on the goods under the law of Western Australia in force at the imposition of uniform duties, and shall not exceed during the second, third, fourth, and fifth of such years respectively, four-fifths, three fifths, two-fifths, and one-fifth of such latter duty, and all duties imposed under this section shall cease at the expiration of the fifth year after the imposition of uniform duties.

If at any time during the five years the duty on any goods under this section is higher than the duty imposed by the Commonwealth on the importation of the like goods, then such higher duty shall be collected on the goods when imported into Western Australia from beyond the limits of the Commonwealth.

96. During a period of ten years after the establishment of the Commonwealth and thereafter until the Parliament otherwise provides, the Parliament may grant financial assistance to any State on such terms and conditions as the Parliament thinks fit.

97. Until the Parliament otherwise provides, the laws in force in any Colony which has become or becomes a State with respect to the receipt of revenue and the expenditure of money on account of the Government of the Colony, and the review and audit of such receipt and expenditure, shall apply to the receipt of revenue and the expenditure of money on account of the Commonwealth in the State in the same manner as if the Commonwealth, or the Government or an officer of the Commonwealth, were mentioned whenever the Colony, or the Government or an officer of the Colony, is mentioned.

98. The power of the Parliament to make laws with respect to trade and commerce extends to navigation and shipping, and to railways the property of any State.

99. The Commonwealth shall not, by any law or regulation of trade, commerce, or revenue, give preference to one State or any part thereof over another State or any part thereof.

100. The Commonwealth shall not, by any law or regulation of trade or commerce, abridge the right of a State or of the residents therein to the reasonable use of the waters of rivers for conservation or irrigation.

101. There shall be an Inter-State Commission, with such powers of adjudication and administration as the Parliament deems necessary for the execution and maintenance, within the Commonwealth, of the provisions of this Constitution relating to trade and commerce, and of all laws made thereunder.

102. The Parliament may by any law with respect to trade or commerce forbid, as to railways, any preference or discrimination by any State, or by any authority constituted under a State, if such preference or discrimination is undue and unreasonable, or unjust to any State; due regard being had to the financial responsibilities incurred by any State in connexion with the construction and maintenance of its railways. But no preference or discrimination shall, within the meaning of this section, be taken to be undue and unreasonable, or unjust to any State, unless so adjudged by the Inter-State Commission.

103. The members of the Inter-State Commission—

(i) Shall be appointed by the Governor-General in Council:

(ii) Shall hold office for seven years, but may be removed within that time by the Governor-General in Council, on an address from both Houses of the Parliament in the same session praying for such removal on the ground of proved misbehaviour or incapacity:

(iii) Shall receive such remuneration as the Parliament may fix; but such remuneration shall not be diminished during their continuance in office.

104. Nothing in this Constitution shall render unlawful any rate for the carriage of goods upon a railway, the property of a State, if the rate is deemed by the Inter-State Commission to be necessary for the development of the territory of the State, and if the rate applies equally to goods within the State and to goods passing into the State from other States.

105. The Parliament may take over from the States their public debts, or a proportion thereof according to the respective numbers of their people as shown by the latest statistics of the Commonwealth, and may convert, renew, or consolidate such debts, or any part thereof; and the States shall indemnify the Commonwealth in respect of the debts taken over, and thereafter the interest payable in respect of the debts shall be deducted and retained from the portions of the surplus revenue of the Commonwealth payable to the several States, or if such surplus is insufficient, or if there is no surplus, then the deficiency or the whole amount shall be paid by the several States.

105.—(1) The Commonwealth may make agreements with the States with respect to the public debts of the States, including—

(a) the taking over of such debts by the Commonwealth;

(b) the management of such debts;

(c) the payment of interest and the provision and management of sinking funds in respect of such debts;

(d) the consolidation, renewal, conversion, and redemption of such debts;

(e) the indemnification of the Commonwealth by the States in respect of debts taken over by the Commonwealth; and

(f) the borrowing of money by the States or by the Commonwealth, or by the Commonwealth for the States.

(2) The Parliament may make laws for validating any such agreement made before the commencement of this section.

(3) The Parliament may make laws for the carrying out by the parties thereto of any such agreement.

(4) Any such agreement may be varied or rescinded by the parties thereto.

(5) Every such agreement and any such variation thereof shall be binding upon the Commonwealth and the States parties thereto notwithstanding anything contained in this Constitution or the Constitution of the several States or in any law of the Parliament of the Commonwealth or of any State.

(6) The powers conferred by this section shall not be construed as being limited in any way by the provision of section one hundred and five of this Constitution.

CHAPTER V—THE STATES

106. The Constitution of each State of the Commonwealth shall, subject to this Constitution, continue as at the establishment of the Commonwealth, or as at the admission or establishment of the State, as the case may be, until altered in accordance with the Constitution of the State.

107. Every power of the Parliament of a Colony which has become or becomes a State, shall, unless it is by this Constitution exclusively vested in the Parliament of the Commonwealth or withdrawn from the Parliament of the State, continue as at the establishment of the Commonwealth, or as at the admission or establishment of the State, as the case may be.

108. Every law in force in a Colony which has become or becomes a State, and relating to any matter within the powers of the Parliament of the Commonwealth, shall, subject to this Constitution, continue in force in the State; and, until provision is made in that behalf by the Parliament of the Commonwealth, the Parliament of the State shall have such powers of alteration and of repeal in respect of any such law as the Parliament of the Colony had until the Colony became a State.

109. When a law of a State is inconsistent with a law of the Commonwealth, the latter shall prevail, and the former shall, to the extent of the inconsistency, be invalid.

110. The provisions of this Constitution relating to the Governor of a State extend and apply to the Governor for the time being of the State, or other chief executive officer or administrator of the government of the State.

111. The Parliament of a State may surrender any part of the State to the Commonwealth; and upon such surrender, and the acceptance thereof by the Commonwealth, such part of the State shall become subject to the exclusive jurisdiction of the Commonwealth.

112. After uniform duties of customs have been imposed, a State may levy on imports or exports, or on goods passing into or out of the State, such charges as may be necessary for executing the inspection laws of the State; but the new produce of all charges so levied shall be for the use of the Commonwealth; and any such inspection laws may be annulled by the Parliament of the Commonwealth.

113. All fermented, distilled, or other intoxicating liquids passing into any State or remaining therein for use, consumption, sale, or storage, shall be subject to the laws of the State as if such liquids had been produced in the State.

114. A state shall not, without the consent of the Parliament of the Commonwealth, raise or maintain any naval or military force, or impose any tax on property of any kind belonging to the Commonwealth, nor shall the Commonwealth impose any tax on property of any kind belonging to a State.

115. A State shall not coin money, nor make anything but gold and silver coin a legal tender in payment of debts.

116. The Commonwealth shall not make any law for establishing any religion, or for imposing any religious observance, or for prohibiting the free exercise of any religion, and no religious test shall be required as a qualification for any office or public trust under the Commonwealth.

117. A subject of the Queen, resident in any State, shall not be subject in any other State to any disability or discrimination which would not be equally applicable to him if he were a subject of the Queen resident in such other State.

118. Full faith and credit shall be given, throughout the Commonwealth to the laws, the public Acts and records, and the judicial proceedings of every State.

119. The Commonwealth shall protect every State against invasion and, on the application of the Executive Government of the State, against domestic violence.

120. Every State shall make provision for the detention in its prisons of persons accused or convicted of offences against the laws of the Commonwealth, and for the punishment of persons convicted of such offences, and the Parliament of the Commonwealth may make laws to give effect to this provision.

CHAPTER VI—NEW STATES

121. The Parliament may admit to the Commonwealth or establish new States, and may upon such admission or establishment make or impose such terms and conditions, including the extent of representation in either House of the Parliament, as it thinks fit.

122. The Parliament may make laws for the government of any territory surrendered by any State to and accepted by the Commonwealth, or of any territory placed by the Queen under the authority of and accepted by the Commonwealth, or otherwise acquired by the Commonwealth, and may allow the representation of such territory in either House of the Parliament to the extent and on the terms which it thinks fit.

123. The Parliament of the Commonwealth may, with the consent of the Parliament of a State, and the approval of the majority of the electors of the State voting upon the question, increase, diminish, or otherwise alter the limits of the State, upon such terms and conditions as may be agreed on, and may, with the like consent, make provision respecting the effect and operation of any increase or diminution or alteration of territory in relation to any State affected.

124. A new State may be formed by separation of territory from a State, but only with the consent of the Parliament thereof, and a new State may be formed by the union of two or more States or parts of States, but only with the consent of the Parliaments of the States affected.

CHAPTER VII—MISCELLANEOUS

125. The seat of Government of the Commonwealth shall be determined by the Parliament, and shall be within territory which shall have been granted to or acquired by the Common-

wealth, and shall be vested in and belong to the Commonwealth, and shall be in the State of New South Wales, and be distant not less than one hundred miles from Sydney.

Such territory shall contain an area of not less than one hundred square miles, and such portion thereof as shall consist of Crown lands shall be granted to the Commonwealth without any payment therefor.

The Parliament shall sit at Melbourne until it meet at the seat of Government.

126. The Queen may authorise the Governor-General to appoint any person, or any persons jointly or severally, to be his deputy or deputies within any part of the Commonwealth, and in that capacity to exercise during the pleasure of the Governor-General such powers and functions of the Governor-General as he thinks fit to assign to such deputy or deputies, subject to any limitations expressed or directions given by the Queen; but the appointment of such deputy or deputies shall not affect the exercise by the Governor-General himself of any power or function.

CHAPTER VIII—ALTERATION OF THE CONSTITUTION

128. This Constitution shall not be altered except in the following manner:—

The proposed law for the alteration thereof must be passed by an absolute majority of each House of the Parliament, and not less than two nor more than six months after its passage through both Houses the proposed law shall be submitted in each State and Territory to the electors qualified to vote for the election of members of the House of Representatives.

But if either House passes any such proposed law by an absolute majority, and the other House rejects or fails to pass it, or passes it with any amendment to which the first-mentioned House will not agree, and if after an interval of three months the first-mentioned House in the same or the next session again passes the proposed law by an absolute majority with or without any amendment which has been made or agreed to by the other House, and such other House rejects or fails to pass it or passes it with any amendment to which the first-mentioned House will not agree, the Governor-General may submit the proposed law as last proposed by the first-mentioned House, and either with or without any amendments subsequently agreed to by both Houses, to the electors in each State and Territory qualified to vote for the election of the House of Representatives.

When a proposed law is submitted to the electors the vote shall be taken in such manner as the Parliament prescribes. But until the qualification of electors of members of the House of Representatives becomes uniform throughout the Commonwealth, only one-half the electors voting for and against the proposed law shall be counted in any State in which adult suffrage prevails.

And if in a majority of the States a majority of the electors voting approve the proposed law, and if a majority of all the electors voting also approve the proposed law, it shall be presented to the Governor-General for the Queen's assent.

No alteration diminishing the proportionate representation of any State in either House of the Parliament, or the minimum number of representatives of a State in the House of Representatives, or increasing, diminishing, or otherwise altering the limits of the State, or in any manner affecting the provisions of the Constitution in relation thereto, shall become law unless the majority of the electors voting in that State approve the proposed law.

In this section, "Territory" means any territory referred to in section one hundred and twenty-two of this Constitution in respect of which there is in force a law allowing its representation in the House of Representatives.

SCHEDULE

OATH

I, *A.B.*, do swear that I will be faithful and bear true allegiance to Her Majesty Queen Victoria, Her heirs and successors according to law. SO HELP ME GOD!

AFFIRMATION

I, *A.B.*, do solemnly and sincerely affirm and declare that I will be faithful and bear true allegiance to Her Majesty Queen Victoria, Her heirs and successors according to law.

(NOTE.—*The name of the King or Queen of the United Kingdom of Great Britain and Ireland for the time being is to be substituted from time to time.)*

GOVERNMENT

Parliamentary government

Scheme of parliamentary government

Under the Australian Constitution the legislative power of the Commonwealth of Australia is vested in the Parliament of the Commonwealth, which consists of the Queen, the Senate and the House of Representatives. The Queen is represented throughout the Commonwealth by the Governor-General. In each Australian State there is a State Governor, who is the representative of the Queen for the State. The Governor has such powers within the State as are conferred upon him by the Letters Patent constituting his office, and he exercises these powers in accordance with instructions issued to him by the Queen, detailing the manner in which his duties are to be fulfilled.

No Act of the Parliament of the United Kingdom passed after the commencement of the *Australia Act 1986* extends, or is deemed to extend, to the Commonwealth of Australia or to an Australian State or Territory as part of the law of the Commonwealth, of the State or of the Territory. Further, the restrictions that formerly existed on the legislative powers of the Parliaments of the States were removed by the Act.

In the Commonwealth Parliament the Upper House is known as the Senate, and in the bicameral State Parliaments as the Legislative Council. The Legislature in all States was bicameral until 1922 when the Queensland Parliament became unicameral upon the abolition of the Upper House. In the Commonwealth Parliament the Lower House is known as the House of Representatives; in the State Parliaments of New South Wales, Victoria, Queensland and Western Australia as the Legislative Assembly; and in the State Parliaments of South Australia and Tasmania as the House of Assembly. The single House of Parliament in Queensland is known as the Legislative Assembly. The extent of the legislative powers of each of the seven Parliaments is defined by the Australian and State Constitutions respectively. In those States that have a bicameral legislature, the Legislative Assembly or House of Assembly, as the case may be, is the larger House.

The members of the Parliaments of each State are elected by the people, the franchise extending to Australian citizens who are at least 18 years of age and possess certain residential qualifications. For the Commonwealth Parliament the qualifications for the franchise are identical for both Houses, extending to Australian citizens and British subjects who are on the Commonwealth Electoral Roll and who are not less than 18 years of age.

The Sovereign

On 7 February 1952 the then Governor-General of the Commonwealth of Australia, acting with advice of members of the Federal Executive Council, proclaimed Princess Elizabeth as Queen Elizabeth the Second, Queen of this Realm and of all Her other Realms and Territories, Head of the Commonwealth, Defender of the Faith, Supreme Liege Lady in and over the Commonwealth of Australia. The coronation of Her Majesty took place in Westminster Abbey on 2 June 1953. By the *Royal Style and Titles Act 1973*, which Her Majesty assented to in Canberra on 19 October 1973, the Commonwealth Parliament assented to the adoption by Her Majesty, for use in relation to Australia and its Territories, of the Style and Titles set out in the Schedule to that Act. On the same day, also in Canberra, Her Majesty issued a Proclamation, under the Great Seal of Australia, appointing and declaring that Her Majesty's Style and Titles should henceforth be, in relation to Australia and its Territories, 'Elizabeth the Second, by the Grace of God Queen of Australia and Her other Realms and Territories, Head of the Commonwealth'.

The Governor-General

Powers and functions

Under the Australian Constitution, the Governor-General exercises the executive power of the Commonwealth of Australia, and certain other powers and functions conferred by the Constitution that include, among others, the powers to appoint times for holding the sessions of the Parliament, to prorogue Parliament, and to dissolve the House of Representatives; to cause writs to be issued for general elections of members of the House of Representatives; to assent in the Queen's name to a proposed law passed by both Houses of the Parliament; to choose and summon Executive Councillors, who hold office during the Governor-General's pleasure; and to appoint Ministers of State for the Commonwealth of Australia. In addition, the command-in-chief of the Defence Force of the Commonwealth of Australia is vested in the Governor-General as the Queen's representative.

Many Acts of the Commonwealth Parliament provide that the Governor-General may make regulations to give effect to the Acts. The Governor-General may also be authorised by statute to issue proclamations—for example, to declare an Act in force. He has been given power by statute to legislate for certain of the Australian Territories. Under the provisions of the Constitution, as well as by the conventions of responsible government in British Commonwealth countries, the Governor-General's executive functions are exercised on the advice of Ministers of State.

The present Governor-General is His Excellency the Right Honourable Sir Ninian Martin Stephen, A.K., G.C.M.G., G.C.V.O., K.B.E., who has held office since 29 July 1982.

Holders of office

The names of the persons who have held the office of Governor-General from the inception of the Commonwealth of Australia are listed in *Year Book* No. 61.

Administrators

In addition to the holders of the office of Governor-General, certain persons have, from time to time, been appointed by the Queen to administer the Government of the Commonwealth of Australia. These persons are appointed in the event of the death, incapacity, removal from office or absence from Australia of the Governor-General.

Governors of the States

Powers and functions

The Queen is represented in each of the Australian States by a Governor, the office having been constituted by Letters Patent issued under the Great Seal of the United Kingdom on various dates. The Governors of the States exercise prerogative powers conferred on them by these Letters Patent, their commissions of appointment and the Governor's Instructions given them under the Royal Sign Manual and Signet or other instrument, as specified in the Letters Patent. In addition, they have been invested with various statutory functions by State Constitutions and the Commonwealth *Australia Act 1986*, as well as under the Acts of the Parliaments of the States.

A Governor of a State assents in the Queen's name to Bills passed by the Parliament of the State. Since the enactment of the Australia Act, an Act of Parliament of a State that has been assented to by the Governor of the State is no longer subject to disallowance by the Queen or suspension pending signification of the Queen's pleasure. The Governor administers the prerogative of mercy by the reprieve or pardon of criminal offenders within his jurisdiction, and may remit fines and penalties due to the Crown in right of the State. In the performance of his functions generally, particularly those conferred by statute, the Governor of a State acts on the advice of Ministers of State for the State.

STATE GOVERNORS, HOLDERS OF OFFICE, OCTOBER 1987

New South Wales	His Excellency Air Marshal Sir James Anthony Rowland, A.C., K.B.E., D.F.C., A.F.C.
Victoria	His Excellency Dr Davis McCaughey, A.C.
Queensland	His Excellency the Honourable Sir Walter Benjamin Campbell, Q.C.
Western Australia	His Excellency Professor Gordon Stanley Reid, A.C.
South Australia	His Excellency Lt-Gen. Sir Donald Beaumont Dunstan, K.B.E., C.B.
Tasmania	His Excellency Sir Phillip Harvey Bennett, K.B.E., A.O., D.S.O.

Commonwealth Government Ministries

The following list shows the name of each Commonwealth Government Ministry to hold office since 1 January 1901 and the limits of its term of office.

COMMONWEALTH GOVERNMENT MINISTRIES, 1901 TO 1987

(i)	BARTON MINISTRY	1 January 1901 to 24 September 1903
(ii)	DEAKIN MINISTRY	24 September 1903 to 27 April 1904
(iii)	WATSON MINISTRY	27 April 1904 to 17 August 1904
(iv)	REID-MCLEAN MINISTRY	18 August 1904 to 5 July 1905
(v)	DEAKIN MINISTRY	5 July 1905 to 13 November 1908
(vi)	FISHER MINISTRY	13 November 1908 to 2 June 1909
(vii)	DEAKIN MINISTRY	2 June 1909 to 29 April 1910
(viii)	FISHER MINISTRY	29 April 1910 to 24 June 1913
(ix)	COOK MINISTRY	24 June 1913 to 17 September 1914
(x)	FISHER MINISTRY	17 September 1914 to 27 October 1915
(xi)	HUGHES MINISTRY	27 October 1915 to 14 November 1916
(xii)	HUGHES MINISTRY	14 November 1916 to 17 February 1917
(xiii)	HUGHES MINISTRY	17 February 1917 to 8 January 1918
(xiv)	HUGHES MINISTRY	10 January 1918 to 9 February 1923
(xv)	BRUCE-PAGE MINISTRY	9 February 1923 to 22 October 1929
(xvi)	SCULLIN MINISTRY	22 October 1929 to 6 January 1932
(xvii)	LYONS MINISTRY	6 January 1932 to 7 November 1938
(xviii)	LYONS MINISTRY	7 November 1938 to 7 April 1939
(xix)	PAGE MINISTRY	7 April 1939 to 26 April 1939
(xx)	MENZIES MINISTRY	26 April 1939 to 14 March 1940
(xxi)	MENZIES MINISTRY	14 March 1940 to 28 October 1940
(xxii)	MENZIES MINISTRY	28 October 1940 to 29 August 1941
(xxiii)	FADDEN MINISTRY	29 August 1941 to 7 October 1941
(xxiv)	CURTIN MINISTRY	7 October 1941 to 21 September 1943
(xxv)	CURTIN MINISTRY	21 September 1943 to 6 July 1945
(xxvi)	FORDE MINISTRY	6 July 1945 to 13 July 1945
(xxvii)	CHIFLEY MINISTRY	13 July 1945 to 1 November 1946
(xxviii)	CHIFLEY MINISTRY	1 November 1946 to 19 December 1949
(xxix)	MENZIES MINISTRY	19 December 1949 to 11 May 1951
(xxx)	MENZIES MINISTRY	11 May 1951 to 11 January 1956
(xxxi)	MENZIES MINISTRY	11 January 1956 to 10 December 1958
(xxxii)	MENZIES MINISTRY	10 December 1958 to 18 December 1963
(xxxiii)	MENZIES MINISTRY	18 December 1963 to 26 January 1966
(xxxiv)	HOLT MINISTRY	26 January 1966 to 14 December 1966
(xxxv)	HOLT MINISTRY	14 December 1966 to 19 December 1967
(xxxvi)	MCEWEN MINISTRY	19 December 1967 to 10 January 1968
(xxxvii)	GORTON MINISTRY	10 January 1968 to 28 February 1968
(xxxviii)	GORTON MINISTRY	28 February 1968 to 12 November 1969
(xxxix)	GORTON MINISTRY	12 November 1969 to 10 March 1971
(xl)	MCMAHON MINISTRY	10 March 1971 to 5 December 1972
(xli)	WHITLAM MINISTRY	5 December 1972 to 19 December 1972
(xlii)	WHITLAM MINISTRY	19 December 1972 to 11 November 1975
(xliii)	FRASER MINISTRY	11 November 1975 to 22 December 1975
(xliv)	FRASER MINISTRY	22 December 1975 to 20 December 1977
(xlv)	FRASER MINISTRY	20 December 1977 to 3 November 1980
(xlvi)	FRASER MINISTRY	3 November 1980 to 11 March 1983
(xlvii)	HAWKE MINISTRY	11 March 1983 to 1 December 1984
(xlviii)	HAWKE MINISTRY	1 December 1984 to 24 July 1987
(xlix)	HAWKE MINISTRY	24 July 1987

In *Year Book* No.17, 1924, the names are given of each Ministry up to the Bruce-Page Ministry together with the names of the successive holders of portfolios therein. *Year Book* No. 39 contains a list which covers the period between 9 February 1923, the date on which the Bruce-Page Ministry assumed power, and 31 July 1951, showing the names of all persons who held office in each Ministry during that period. The names of members of subsequent

Ministries are listed in issues of the *Year Book* from No. 39 to No. 61 inclusive, and in successive issues from No. 64.

This issue shows particulars of the Third Hawke Ministry (at September 1987).

LEADERS OF THE GOVERNMENT, SEPTEMBER 1987

Commonwealth	THE HON. R. J. L. HAWKE, A.C., M.P. (VIC.) (A.L.P.)
New South Wales	THE HON. B. UNSWORTH, M.L.A. (A.L.P.)
Victoria	THE HON. J. CAIN, M.L.A. (A.L.P.)
Queensland	The HON. SIR J. BJELKE-PETERSEN, K.C.M.G., M.L.A. (N.P.)
Western Australia	THE HON. B. T. BURKE, M.L.A. (A.L.P.)
South Australia	THE HON. J. C. BANNON, M.P. (A.L.P.)
Tasmania	THE HON. R. T. GRAY, M.H.A. (L.P.)
Northern Territory	THE HON. S. P. HATTON, M.L.A. (C.L.P.)

COMMONWEALTH GOVERNMENT

Third Hawke Ministry—at September 1987

* **Prime Minister**	**THE HON. R. J. L. HAWKE, A.C., M.P.**
* Special Minister of State Minister Assisting the Prime Minister for the Status of Women and for the Bicentenary Minister Assisting the Minister for Community Services and Health	**SENATOR THE HON. S. RYAN**
* **Deputy Prime Minister** **Attorney-General** **Minister Assisting the Prime Minister for Commonwealth—State Relations**	**THE HON. L. BOWEN, M.P.**
Minister for Justice	**SENATOR THE HON. M. TATE**
Minister for Consumer Affairs and Minister assisting the Treasurer for Prices	**THE HON. P. STAPLES, M.P.**
* **Leader of the Government in the Senate** **Minister for Industry, Technology and Commerce**	**SENATOR THE HON. J. BUTTON**
Minister for Science and Small Business	**THE HON. B. O. JONES, M.P.**
* **Deputy Leader of the Government in the Senate** **Manager of Government Business in the Senate** **Minister for Transport and Communications**	**SENATOR THE HON. G. EVANS, Q.C.**
Minister for Land Transport and Infrastructure Support	**THE HON. P. DUNCAN, M.P.**
* **Treasurer**	**THE HON. P. J. KEATING, M.P.**
* **Minister for Immigration, Local Government and Ethnic Affairs** **Vice-President of the Executive Council** **Leader of the House** **Minister Assisting the Prime Minister for Multicultural Affairs**	**THE HON. M. J. YOUNG, M.P.**
Minister for Local Government	**SENATOR THE HON. M. REYNOLDS**
* **Minister for Finance**	**SENATOR THE HON. P. WALSH**
* **Minister for Foreign Affairs and Trade**	**THE HON. B. HAYDEN, M.P.**
Minister for Trade Negotiations Minister Assisting the Minister for Industry, Technology and Commerce Minister Assisting the Minister for Primary Industries and Energy	**THE HON. M. DUFFY, M.P.**
* **Minister for Industrial Relations** **Minister Assisting the Prime Minister for Public Service Matters**	**THE HON. R. WILLIS, M.P.**

Third Hawke Ministry—at September 1987—*continued*

* **Minister for Employment, Education and Training**	THE HON. J. S. DAWKINS, M.P.
Minister for Employment Services and Youth Affairs Minister Assisting the Treasurer	THE HON. A. C. HOLDING, M.P.
* **Minister for Defence**	THE HON. K. C. BEAZLEY, M.P.
Minister for Defence Science and Personnel	THE HON. R. KELLY, M.P.
* **Minister for Primary Industries and Energy**	THE HON. J. KERIN, M.P.
Minister for Resources	THE HON. P. MORRIS, M.P.
* **Minister for Social Security**	THE HON. B. HOWE, M.P.
* **Minister for Administrative Services**	THE HON. S. WEST, M.P.
Minister for Home Affairs Deputy Manager of Government Business in the Senate	SENATOR THE HON. R. RAY
* **Minister for the Arts, Sport, the Environment, Tourism and Territories**	THE HON. J. BROWN, M.P.
Minister for the Environment and the Arts	SENATOR THE HON. G. RICHARDSON
* **Minister for Community Services and Health**	THE HON. N. BLEWETT, M.P.
Minister for Veterans' Affairs	THE HON. B. HUMPHREYS, M.P.
Minister for Aboriginal Affairs	THE HON. G. L. HAND, M.P.

NOTE: * Minister in the Cabinet

The Leader of the Opposition plays an important part in the Party system of government which operates in the Australian Parliaments. The following list gives the names of the holders of this position in each of the Parliaments in August 1987.

LEADERS OF THE OPPOSITION, AUGUST 1987

Commonwealth	THE HON. J. W. HOWARD, M.P. (L.P.)
New South Wales	The HON. N. F. GREINER, M.L.A. (L.P.)
Victoria	THE HON. J. G. KENNETT, M.L.A. (L.P.)
Queensland	N. G. WARBURTON, M.L.A. (A.L.P.)
Western Australia	B. J. MACKINNON, M.L.A. (L.P.)
South Australia	J. W. OLSEN, M.P. (L.P.)
Tasmania	The Hon. N. L. C. BATT, M.H.A. (A.L.P.)
Northern Territory	T. E. SMITH, M.L.A. (A.L.P.)

Numbers and salaries of Commonwealth Government Ministers

Under sections 65 and 66, respectively, of the Australian Constitution the number of Ministers of State was not to exceed seven, and the annual sum payable for their salaries was not to exceed £12,000, each provision to operate, however, 'until the Parliament otherwise provides'.

Subsequently, the number and salaries have increased from time to time, and as at 1 September 1987 the number of Ministers was 30 and ministerial salaries ranged from $22,683 for a Minister other than the Prime Minister, Deputy Prime Minister, Treasurer or Leader of the Government in the Senate to $50,156 for the Prime Minister. An additional ministerial allowance of $24,134 a year is payable to the Prime Minister, $14,233 a year to the Deputy Prime Minister, $12,068 a year to the Treasurer, the Leader of the House and the Leader of the Government in the Senate, and $9,901 a year to other Ministers.

All amounts shown in the foregoing paragraphs are in addition to amounts payable as Parliamentary allowances.

Parliaments and elections

The Commonwealth Parliaments

The first Parliament of the Commonwealth of Australia was convened by proclamation dated 29 April 1901 by His Excellency the Marquis of Linlithgow, then Earl of Hopetoun, Governor-General. It was opened on 9 May 1901 by H.R.H. the Duke of Cornwall and York. The Rt Hon. Sir Edmund Barton, G.C.M.G., K.C., was Prime Minister.

The following table shows the number and duration of Parliaments since Federation.

COMMONWEALTH PARLIAMENTS

Number of Parliament	*Date of opening*	*Date of dissolution*
First	9 May 1901	23 November 1903
Second	2 March 1904	5 November 1906
Third	20 February 1907	19 February 1910
Fourth	1 July 1910	23 April 1913
Fifth	9 July 1913	30 July 1914 (*a*)
Sixth	8 October 1914	26 March 1917
Seventh	14 June 1917	3 November 1919
Eighth	26 February 1920	6 November 1922
Ninth	28 February 1923	3 October 1925
Tenth	13 January 1926	9 October 1928
Eleventh	6 February 1929	16 September 1929
Twelfth	20 November 1929	27 November 1931
Thirteenth	17 February 1932	7 August 1934
Fourteenth	23 October 1934	21 September 1937
Fifteenth	30 November 1937	27 August 1940
Sixteenth	20 November 1940	7 July 1943
Seventeenth	23 September 1943	16 August 1946
Eighteenth	6 November 1946	31 October 1949
Nineteenth	22 February 1950	19 March 1951 (*a*)
Twentieth	12 June 1951	21 April 1954
Twenty-first	4 August 1954	4 November 1955
Twenty-second	15 February 1956	14 October 1958
Twenty-third	17 February 1959	2 November 1961
Twenty-fourth	20 February 1962	1 November 1963
Twenty-fifth	25 February 1964	31 October 1966
Twenty-sixth	21 February 1967	29 September 1969
Twenty-seventh	25 November 1969	2 November 1972
Twenty-eighth	27 February 1973	11 April 1974 (*a*)
Twenty-ninth	9 July 1974	11 November 1975 (*a*)
Thirtieth	17 February 1976	8 November 1977
Thirty-first	21 February 1978	19 September 1980
Thirty-second	25 November 1980	4 February 1983 (*a*)
Thirty-third	21 April 1983	26 October 1984
Thirty-fourth	21 February 1985	5 June 1987 (*a*)
Thirty-fifth	14 September 1987	—

(*a*) A dissolution of both the Senate and the House of Representatives was granted by the Governor-General under section 57 of the Constitution.

The thirty-fourth Parliament ended on 5 June 1987 when both houses were dissolved. Writs were issued by the Governor-General on 5 June 1987 for elections in all States and Territories. The election was announced for 11 July 1987. The thirty-fifth Paliament opened on 14 September 1987.

Qualifications for membership and for franchise—Commonwealth Parliament

Any Australian citizen, 18 years of age or over and who is, or is qualified to become, an elector of the Commonwealth Parliament is qualified for membership of either house of the

Commonwealth Parliament. Any Australian citizen (or British subject who was on the Commonwealth Roll as at 25 January 1984) over 18 years of age is qualified to enrol and vote at federal elections. Residence in a subdivision for a period of one month before enrolment is necessary to enable a qualified person to enrol. Enrolment and voting are compulsory for all eligible persons.

The principal reasons for disqualification of persons otherwise eligible for election as members of either Commonwealth House are: membership of the other House; allegiance to a foreign power; being attainted of treason; being convicted and under sentence for any offence punishable by imprisonment for one year or longer; being an undischarged bankrupt or insolvent; holding an office of profit under the Crown (with certain exceptions); or having a pecuniary interest in any agreement with the public service of the Commonwealth except as a member of an incorporated company of more than 25 persons. Persons convicted of treason and not pardoned, or convicted and under sentence for any offence punishable by imprisonment for five years or longer, or of unsound mind, or persons who are holders of temporary entry permits under the *Migration Act 1958* or are prohibited non-citizens under that Act, are excluded from enrolment and voting.

Commonwealth Parliaments and elections

From the establishment of the Commonwealth of Australia until 1949 the Senate consisted of 36 members, 6 being returned by each of the original federating States. The Australian Constitution empowers the Commonwealth Parliament to increase or decrease the size of the Parliament, and, as the population of Australia had more than doubled since its inception, the Parliament passed the *Representation Act 1948* which provided that there should be 10 Senators from each State instead of 6, thus increasing the total to 60 Senators, enlarging both Houses of Parliament and providing a representation ratio nearer to the proportion which existed at Federation. The *Representation Act 1983* further provided for 12 Senators for each State from the first meeting of the thirty-fourth Parliament.

The *Senate (Representation of Territories) Act 1973* made provision for two Senators to be elected from both the Northern Territory and the Australian Capital Territory. Elections for the Territory Senators are held at the same time as general elections for the House of Representatives.

In accordance with the Constitution, the total number of State Members of the House of Representatives must be as nearly as practicable twice the total number of State Senators. Consequent upon the increase in the size of the Senate in 1949, the number of State Members was increased from 74 to 121. In 1955 there were 122 State Members; in 1969, 123; in 1974, 124; in 1977, 121; in 1980, 122. From the first meeting of the thirty-fourth Parliament, there was a further increase of 23 to 145 State Members flowing from the increase in the number of State Senators to 72.

Redistribution of the States into electoral divisions has taken place in 1949, 1955, 1968, 1974 (Western Australia only), 1977, 1979 (Western Australia only) and 1984. The quota (or average number) of electors is the basis for electoral distribution. The Redistribution Committee may vary the enrolment of electorates by up to 10 per cent in order to achieve equality in enrolment midway between redistributions and to take account of economic, social and regional interests, means of communication and travel, the trend of population changes, physical features and area, and existing boundaries of electoral divisions.

The Electoral Commissioner determines the representation entitlements of the States during the twelfth month of the life of each Parliament. Determinations are based on the latest population statistics as provided by the Australian Statistician. Should the representation entitlement of a State change, a redistribution is mandatory. The representation entitlements of the States at the three most recent determinations are shown in the following table.

REPRESENTATION ENTITLEMENTS OF THE STATES

State	*1979*	*1981*	*1984*
New South Wales	43	43	51
Victoria	33	33	39
Queensland	19	19	24
South Australia	11	11	13
Western Australia	11	11	13
Tasmania	5	5	5
Total	**122**	**122**	**145**

From 1922 to 1968 the Northern Territory was represented in a limited capacity by one member in the House of Representatives. In May 1968 the *Northern Territory Representation Act 1922* was amended to give full voting rights to the Member for the Northern Territory effective from 15 May 1968, the day on which the Act received Royal Assent.

From 1948 to 1967 the Australian Capital Territory was represented in a limited capacity by one member in the House of Representatives. The Member for the Australian Capital Territory was granted full voting rights on 21 February 1967.

Following the passing of the *Australian Capital Territory Representation (House of Representatives) Act 1973* the Australian Capital Territory was divided into two electoral divisions.

Members of the House of Representatives are elected for the duration of the Parliament, which is limited to three years. At elections for Senators the whole State constitutes the electorate. For the purpose of elections for the House of Representatives the State is divided into single electorates corresponding in number to the number of members to which the State is entitled.

In 1948, amendments to the *Commonwealth Electoral Act 1918* changed the system of scrutiny and counting of votes in Senate elections from the alternative vote to that of proportional representation. The method of voting for both the Senate and the House of Representatives is preferential.

Particulars of voting at Senate elections and elections for the House of Representatives up to 1984 appear in earlier issues of the *Year Book*. Additional information is available in the *Election Statistics* issued by the Electoral Commissioner following each election and printed as Parliamentary Papers.

The numbers of electors and of primary votes cast for the major political parties in each State and Territory at the latest election for each House of the Commonwealth Parliament were as follows:

COMMONWEALTH PARLIAMENT ELECTIONS
11 JULY 1987

	N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Australia*
HOUSE OF REPRESENTATIVES									
Electors enrolled	3,555,060	2,698,034	1,707,161	942,880	906,677	300,763	79,921	162,717	10,353,213
Number of votes recorded for—									
Australian Labor Party	1,439,098	1,139,361	683,639	366,985	377,575	118,077	26,794	79,791	4,231,320
Liberal Party	1,059,597	922,474	319,607	350,224	332,305	140,217	..	44,806	3,169,230
National Party	374,466	154,073	438,625	30,933	54,873	..	9,826	..	1,062,796
Country Liberal Party	..	..	..	..	..	..	20,551	..	20,551
Australian Democrats	201,924	163,088	74,215	64,163	27,302	16,371	..	10,124	557,187
Unite Australia Party	1,837	5,427	..	7,327	..	..	..	..	14,591
Others	108,077	42,268	4,402	4,197	3,113	..	..	13,267	175,324
Formal votes	3,184,999	2,426,691	1,520,488	823,829	795,168	274,665	57,171	147,988	9,230,999
Informal votes	152,724	133,774	53,613	60,378	55,778	14,297	3,488	5,328	479,380
Total votes recorded	**3,337,723**	**2,560,465**	**1,574,101**	**884,207**	**850,946**	**288,962**	**60,659**	**153,316**	**9,710,379**
SENATE									
Electors enrolled	3,555,060	2,698,034	1,707,161	942,880	906,677	300,763	79,921	162,717	10,353,213
Number of votes recorded for—									
Australian Labor Party	1,355,792	1,086,513	643,094	354,747	354,328	113,638	30,872	74,876	4,013,860
Liberal Party	..	878,899	275,085	328,039	324,028	108,039	..	51,090	1,965,180
National Party	..	140,143	439,618	29,954	45,787	..	8,892	..	664,394
Liberal-National Party	1,289,888	..	..	..	..	..	..	..	1,289,888
Country Liberal Party	..	..	..	..	..	..	19,970	..	19,970
Australian Democrats	290,049	211,043	115,456	95,831	47,534	18,841	..	15,353	794,107
Unite Australia Party	5,458	11,213	1,638	4,775	1,620	..	..	..	24,704
Nuclear Disarmament Party	48,998	28,352	17,411	..	..	..	..	..	94,761
Vallentine Peace Group	..	..	..	..	40,048	..	..	..	40,048
Brian Harradine Group	..	..	..	..	..	37,037	..	..	37,037
Others	206,289	113,443	38,058	43,696	14,338	1,305	1,783	8,819	427,731
Formal votes	3,196,474	2,469,606	1,530,360	857,042	827,683	278,860	61,517	150,138	9,371,680
Informal votes	164,542	102,382	49,609	33,514	28,284	11,119	2,374	3,608	395,432
Total votes recorded	**3,361,016**	**2,571,988**	**1,579,969**	**890,556**	**855,967**	**289,979**	**63,891**	**153,746**	**9,767,112**

The state of the parties in each House at the commencement of the thirty-fifth Parliament was: *Senate*—Australian Labor Party 32; Liberal Party of Australia 27; National Party of Australia 6; Australian Democrats 7; Country Liberal Party 1; Brian Harradine Group 1; Vallentine Peace Group 1; Nuclear Disarmament Party 1; *House of Representatives*—Australian Labor Party 86; Liberal Party of Australia 43; National Party of Australia 19.

Referendums

In accordance with section 128 of the Constitution, any proposed law for the alteration of the Constitution, in addition to being passed by an absolute majority of each House of Parliament, must be submitted to a referendum of the electors in each State and Territory and must be approved by a majority of the electors in a majority of the States and by a majority of all the voters who voted before it can be presented for Royal Assent.

Since 1901, 38 proposals have been submitted to referendums and the consent of the electors has been received in 8 cases: the first in relation to the election of Senators in 1906, the second and third in respect of State Debts—one in 1910 and the other in 1928, the fourth in respect of Social Services in 1946 and the fifth in respect of Aboriginals in 1967. The remaining three proposals in relation respectively to Senate casual vacancies, maximum retirement age for justices of the High Court and judges of other Federal Courts, and the right of electors in the Territories to vote in referendums for the alteration of the Constitution, were approved in May 1977. In addition to referendums for alterations of the Constitution, other Commonwealth referendums have been held—2 prior to Federation regarding the proposed Constitution and 2 regarding military service during the 1914–1918 War. A National song poll was held on 21 May 1977. Voting was preferential and after the distribution of preferences *Advance Australia Fair* became the National song of Australia.

For further details of referendums *see Year Book* No. 52, pages 66–68, *Year Book* No. 60, pages 90–91, *Year Book* No. 62, pages 72–73 and *Year Book* No. 70, pages 55–56.

The Parliaments of the States

This section contains summarised information; for greater detail refer to State *Year Books*.

STATE OF THE PARTIES IN COMMONWEALTH AND STATE PARLIAMENTS
OCTOBER 1987

Commonwealth			
House of Representatives—		*Senate—*	
A.L.P.	86	A.L.P.	32
L.P.	43	L.P.	27
N.P.A.	19	A.D.	7
		N.P.A.	6
		IND.	2
		N.D.P.	1
New South Wales			
Legislative Assembly—		*Legislative Council—*	
A.L.P.	55	A.L.P.	24
L.P.	23	L.P.	11
N.P.A.	16	N.P.A.	6
IND.	5	IND.	3
		A.D.	1
Victoria			
Legislative Assembly—		*Legislative Council—*	
A.L.P.	47	A.L.P.	22
L.P.	31	L.P.	17
N.P.A.	10	N.P.A.	5
Queensland			
Legislative Assembly—			
N.P.A.	49		
A.L.P.	30		
L.P.	10		

STATE OF THE PARTIES IN COMMONWEALTH AND STATE PARLIAMENTS OCTOBER 1987—*continued*

South Australia

House of Assembly—		*Legislative Council—*	
A.L.P.	27	A.L.P.	10
IND. Labour	2	L.P.	10
L.P.	16	A.D.	2
N.C.P.	1		
IND. Lib	1		

Western Australia

Legislative Assembly—		*Legislative Council—*	
A.L.P.	32	A.L.P.	16
L.P.	18	L.P.	14
N.P.A.	7	N.P.A.	4

Tasmania

House of Assembly—		*Legislative Council—*	
L.P.	19	A.L.P.	1
A.L.P.	14	IND.	17
IND.	2		

Northern Territory

Legislative Assembly—	
C.L.P.	16
A.L.P.	9
IND.	2
N.T.N.P.	1

NOTE: Explanation of abbreviations:
A.D.—Australian Democrats; A.L.P.—Australian Labor Party; C.L.P.—Country-Liberal Party; IND—Independent; L.P.—Liberal Party; N.D.P.—Nuclear Disarmament Party; N.P.A.—National Party of Australia; N.T.N.P.—Northern Territory National Party.

Outlay on parliamentary government

The accompanying table shows, in broad groups, the expenditure incurred in the operation of the parliamentary system in Australia, comprising the Governor-General and Governors, the Ministries, the Upper and Lower Houses of Parliament, and electoral activities; *it does not attempt to cover the expenditure on Commonwealth and State administration generally.* Only broad groups are shown, but even these are not entirely comparable because of differences in accounting procedures and in the presentation of accounts. Expenditure under the head of Governor-General or Governor includes salaries of Government House staffs and maintenance of residences, official establishments, grounds, etc., and expenditure on capital works and services.

OUTLAY ON PARLIAMENTARY GOVERNMENT, 1985–86
($'000)

Expenditure group	*Cwlth*	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*Total*
Governor-General (*a*)	4,005	1,153	1,928	991	1,008	1,010	923	888	11,906
Ministry (*b*)	9,430	2,241	2,143	4,049	1,107	1,229	1,060	2,081	23,340
Parliament—									
Upper House (*c*)	8,825	2,826	3,372	..	1,789	3,300	963	..	21,075
Lower House (*c*)	9,879	5,405	6,745	3,401	3,635	4,933	1,452	2,034	37,484
Both Houses (*d*)	76,307	24,278	15,734	11,541	5,936	6,736	5,873	2,109	148,514
Miscellaneous (*e*)	34,707	1,876	3,084	1,383	3,223	1,191	435	93	45,992
Total, Parliament	*143,153*	*37,779*	*33,006*	*21,365*	*16,698*	*18,399*	*10,706*	*7,205*	*288,311*
Electoral (*f*)	31,532	1,484	1,636	1,826	2,921	3,889	1,155	3,075	47,518
Royal Commissions	2,381	1,485	80	33	128	50	30	..	4,187
Total	**177,066**	**40,748**	**34,722**	**23,224**	**19,747**	**22,338**	**11,891**	**10,280**	**340,016**

(*a*) Salaries and other expenses, including maintenance of house and grounds. (*b*) Salaries, travelling and other expenses as ministers. (*c*) Allowances to members (including ministers' salaries as members), travelling and other expenses. (*d*) Government contribution to members' superannuation funds, printing, reporting staff, library, etc. (*e*) Services, furniture, stores, etc. (*f*) Salaries, cost of elections, etc.

OUTLAY ON PARLIAMENTARY GOVERNMENT
($'000)

Year	*Cwlth(a)*	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.(b)*	*Total*
1980–81	97,293	19,582	19,290	19,487	9,227	11,180	7,319	4,345	187,723
1981–82	103,276	27,508	27,610	23,738	10,829	12,916	8,046	2,948	216,872
1982–83	132,307	29,431	28,544	20,654	13,254	15,301	6,445	4,074	250,011
1983–84	137,308	38,041	28,381	21,272	13,721	16,722	6,648	5,926	268,019
1984–85	190,019	38,060	38,761	22,202	14,894	19,033	7,410	9,574	339,953
1985–86	177,066	40,748	34,722	23,224	19,747	22,338	11,891	10,280	340,016

(*a*) Includes appropriations for the construction of the new Commonwealth Parliament House (*b*) From 1981-82 more detailed information has been obtained which has allowed a more accurate calculation of the cost of parliamentary government in the Northern Territory. Figures for earlier years on the revised basis are not available.

Acts of the Commonwealth Parliaments

In the Commonwealth Parliament all laws are enacted in the name of the Sovereign, the Senate, and the House of Representatives. The subjects with respect to which the Commonwealth Parliament is empowered to make laws are enumerated in the Australian Constitution. In all States, other than South Australia and Tasmania, laws are enacted in the name of the Sovereign by and with the consent of the Legislative Council (except in Queensland) and Legislative Assembly. In South Australia and Tasmania laws are enacted in the name of the Governor of the State, with the advice and consent of the Parliament in the case of South Australia, and of the Legislative Council and House of Assembly in the case of Tasmania. Generally, assent to Bills passed by the Legislatures is given by the Governor-General or State Governor acting on behalf of, and in the name of, the Sovereign. In certain special cases Bills are reserved for the Royal Assent. The Parliaments of the States are empowered generally, subject to the Australian Constitution, to make laws in and for their respective States in all cases whatsoever. The power of the States to make laws was enhanced in 1986 by the enactment by the Commonwealth Parliament of the *Australia Act 1986* and the accompanying *Australia (Request and Consent) Act 1986*. Subject to certain limitations they may alter, repeal, or vary their Constitutions. Where a law of a State is inconsistent with a law of the Commonwealth Parliament, the latter law prevails and the former law is, to the extent of the inconsistency, invalid.

The enactment of Commonwealth Parliament legislation

The legislation passed by the Commonwealth Parliament between 1901 and 1973, and which was then still in operation, is published in a consolidated form entitled *Acts of the Parliament 1901–1973*. Since 1974, annual volumes of Acts have also been published. The consolidation contains a chronological table of Acts passed from 1901 to 1973, showing how they are affected by subsequent legislation or lapse of time, together with a table of legislation of the Commonwealth Parliament passed between 1901 and 1973 in relation to the several provisions of the Australian Constitution. Reference should be made to these for complete information.

In 1986 the number of enactments of the Commonwealth Parliament was 168.

National Anthem and Colours of Australia

Details of the official proclamation issued on 19 April 1984 are as follows:

His Excellency, the Governor-General of the Commonwealth of Australia, issued the following Proclamation on 19 April 1984:

> I, SIR NINIAN MARTIN STEPHEN, Governor-General of the Commonwealth of Australia, acting with the advice of the Federal Executive Council, hereby declare:
>
> (a) that the anthem "God Save The Queen" shall henceforth be known as the Royal Anthem and be used in the presence of Her Majesty The Queen or a member of the Royal Family;

(b) that the National Anthem shall consist of the tune known as "Advance Australia Fair" with the following words:

Australians all let us rejoice,
For we are young and free;
We've golden soil and wealth for toil;
Our home is girt by sea;
Our land abounds in nature's gifts
Of beauty rich and rare;
In history's page, let every stage
Advance Australia Fair.
In joyful strains then let us sing,
Advance Australia Fair.

Beneath our radiant Southern Cross
We'll toil with hearts and hands;
To make this Commonwealth of ours
Renowned of all the lands;
For those who've come across the seas
We've boundless plains to share;
With courage let us all combine
To Advance Australia Fair.
In joyful strains then let us sing,
Advance Australia Fair.

(c) that the Vice-Regal Salute to be used in the presence of His Excellency The Governor-General shall consist of the first four bars and the last four bars of the tune known as "Advance Australia Fair";

(d) that the National Anthem shall be used on all official and ceremonial occasions, other than occasions on which either the Royal Anthem or the Vice-Regal Salute is used; and

(e) that green and gold (Pantone Matching System numbers 116C and 348C as used for printing on paper) shall be the national colours of Australia for use on all occasions on which such colours are customarily used.

THE AUSTRALIAN FLAG

(This special article has been contributed by the former Department of the Special Minister of State)

Until Federation, the Australian colonies used the flags of Great Britain for official purposes—the Union Flag (popularly called the Union Jack) and the three Ensigns of the United Kingdom; i.e. the Red Ensign, the Blue Ensign and the White Ensign.

However, in 1900 the Colonial Office in London invited the attention of the Governor-General Designate to the necessity of a Commonwealth flag to enable the new Australian nation to comply with the provisions of legislation governing colonial naval forces and mercantile marine.

Competition for the National Flag

In 1900 the Melbourne journal the *Evening Herald* held a competition with a prize of £25 for the best design for a Federal Australian Flag, and eventually a prize design was selected. This design bears no resemblance to our present National Flag, and actually was of stars and stripes on the pattern of the United States Flag.

Not to be outdone, another Melbourne journal the *Review of Reviews* in their issue of 20 November 1900 gave details of a competition for a design for a Federal Flag, offering £50 for the winning design. This journal stated that the previous competition was purely local, but that its competition would be open to the whole of Australia and overseas countries. However, in April 1901 the Commonwealth Government in a *Gazette* dated 29 April 1901 announced details of an official competition.

The prize money for the Commonwealth Government competition was fixed at £200 for the winning design. This amount included £75 from the *Review of Reviews* journal, £50 from a tobacco company, and the balance of £75 from the Government of Australia. It was agreed that all designs previously entered in the *Evening Herald* competition would be included in the new 'national' competition which was also made world-wide and advertised in many forms in overseas countries.

The Commonwealth Government appointed seven judges, specially selected, representing the Army, Navy, Merchant Marine and Pilot Services and an expert in design, art and heraldry. A total of 32,823 designs was submitted to the judges, and the Prime Minister, the Honourable Edmund Barton, announced that the prize money for the winning designs was to be equally divided between five persons whose designs were more or less similar.

The first National Flag, made to the order of the Commonwealth Government and embodying features of the winning designs, flew above the Exhibition Building in Melbourne on 3 September 1901 when the competition result were announced.

Use of Australian flags

For many years there was considerable misunderstanding in Australia and in other countries in regard to the use of the Australian flags, particularly the Australian Blue Ensign. This was due in the main to the lack of any statutory law governing the flying of national flags in Australia, although endeavours had been made from time to time to lay down some definite procedure for the use of Australian ensigns.

For some time the Australian Blue Ensign was regarded as an official flag for flying at Commonwealth establishments only. The Merchant Flag was often flown privately on land. However, on 15 March 1941 the Prime Minister, Mr Menzies, issued the following press statement:

> The Official view is that there should be no unneccessary restriction placed on the flying of the Blue Ensign on shore. Its use on public buildings, by schools, and by the public generally would not only be permitted but appreciated, provided it is flown in a manner appropriate to the use of a national emblem. Australian merchant vessels will, of course, continue to fly the Commonwealth Red Ensign.

Further support for the more general use of the Australian Blue Ensign was given by the Prime Minister, Mr Chifley, on 24 February 1947 when he issued a statement encouraging the flying of the flag.

Adoption of the Australian National Flag

In 1950, after an interdepartmental committee recommendation, Cabinet approved that the Australian Blue Ensign be adopted as the Australian National Flag. His Majesty King George VI gave formal approval in 1951.

In 1953 the Flags Act was passed in the Commonwealth Parliament, formally establishing the Australian National Flag and the Australian Red Ensign. Thus the nomenclature of Australian flags and ensigns was changed and the Australian Blue Ensign became the Australian National Flag and the Australian Merchant Flag became the Australian Red Ensign.

Her Majesty the Queen's personal flag for Australia

On 20 September 1962 Her Majesty gave her approval for the design of a personal flag for her use in Australia. It consists of a banner of the Commonwealth Arms in the proportion thirty-one by twenty-two, with a large gold seven-pointed star over all in the centre, charged with Her Majesty's initial 'E' in gold, ensigned with the Royal Crown within a chaplet of gold roses on a blue roundel. Her Majesty's personal flag for Australia is used in the same manner as the Royal Standard in the United Kingdom and denotes Her Majesty's presence.

Governor-General's flag

In Commonwealth of Australia *Gazette* No. 56 of 16 July 1936 it was notified that the Governor-General had adopted a personal flag for use in Australia. The flag, which is in the proportion of two to one has a royal blue background on which is the Royal Crest in gold (on a St Edward's Crown a lion statant guardant also crowned) with the words 'Commonwealth of Australia' in dark blue letters on a gold scroll below the Crest. The Governor-General's flag is flown continuously whenever His Excellency is in residence. It is also flown on vehicles in which the Governor-General is travelling.

Flags of the armed services

It was not until 1967 that the Royal Australian Navy was given a specifically Australian ensign. Since 1910 Royal Australian Navy ships had flown the White Ensign of the Royal Navy. On 16 February 1967 the Governor-General Lord Casey signed a Proclamation proclaiming the Australian White Ensign as the ensign for the Royal Australian Navy. This was published in Commonwealth of Australia *Gazette* No. 18 of 1 March 1967.

The Australian Army uses the National Flag and has no individual flag or ensign of its own.

In 1948 the Royal Australian Air Force applied to His Majesty King George VI for an ensign, based on the Royal Air Force ensign but differenced by the addition of the Southern Cross and the Commonwealth Star in the same positions as on the Australian Blue Ensign. His Majesty's Royal Warrant for the adoption of this ensign by the RAAF was given in 1949. In 1981 Her Majesty Queen Elizabeth II approved an amendment to the Royal Air Force Ensign which added the stylised red kangaroo to the centre of the Air Force roundel as depicted on aircraft of the RAAF.

Use and flying of the National Flag

The Australian National Flag should be displayed only in a manner befitting the national emblem; it should not be subjected to indignity or displayed in a position inferior to any other flag or ensign. The Flag normally takes precedence over all other national flags when flown in Australia. It should always be flown aloft and free. When the Australian National Flag is raised or lowered, or when it is carried past in a parade or review, all present should face the flag, men should remove their hats and all should remain silent. Those in uniform should salute.

It is improper to use the Australian National Flag in any of the following ways:

- as a covering of a statue, monument or plaque for an unveilling ceremony (a plain cover should be used);
- as a table or seat cover;
- by allowing it to fall onto or lie upon the ground;
- as a masking for boxes, barriers or intervening space between floor and ground level on a dais or platform.

The National Flag and representations of it should always be shown, represented or used in a dignified manner. It should not be defaced by way of printing or illustrations or masked by other objects, and all symbolic parts of the Flag should be identifiable.

On days of national commemoration the Australian National Flag may be flown on any flagstaffs on public buildings. Special days of national significance are notified as they arise.

Flags are flown at the half-mast position as a sign of mourning. The Flag is brought to the half-mast position by first raising it to the top of the mast and then immediately lowering it slowly to the half-mast position. The Flag should be raised again to the peak before being lowered for the day. The position of the Flag when flying at half-mast will depend on the size of the Flag and the length of the flagstaff. It is essential that it be lowered at least to a position recognisably 'half mast' so as to avoid the appearance of a flag which has accidentally fallen away from the top of the mast owing to a loose flag rope. A satisfactory position for half-masting would normally be when the top of the Flag is one-third of the distance down from the top of the mast.

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

(This special article has been contributed by the Department of the House of Representatives and the Department of the Senate)

On 1 January 1901, Australia came into being as a nation. Before then, the continent of Australia was divided into six colonies: New South Wales, Victoria, Queensland, South Australia, Western Australia and Tasmania, each with its own separate government. The movement to federate into the Commonwealth of Australia developed over a long period, culminating in the last decade of the 19th century, when discussions were held between political representatives of the six colonies.

Given the vastness of the Australian continent, its people decided not to follow the pattern of a unitary government, such as that which exists in the United Kingdom; rather, the separate colonies, which were established under the Constitution as States in a federal system, kept for themselves a vast array of powers, and handed over to the Commonwealth Government specific powers which were written into the Constitution. These powers included defence, postal services, immigration and foreign affairs.

The Constitution provides for a Parliament, consisting of the Queen and a fully-elected Senate and House of Representatives; a separate judiciary, with the High Court at its apex; and an Executive. In keeping with the Westminister tradition, the Constitution establishes that Ministers should come from the ranks of members of either House of the Parliament. The Constitution provides that the Queen shall be represented in Australia by the Governor-General.

The first Parliament was convened in Melbourne in 1901. Following the establishment of the Australian Capital Territory in 1911, construction of a provisional Parliament House commenced in Canberra. The provisional Parliament House was opened in 1927.

In 1978 a Parliament House Construction Authority was established with responsibility for planning and building a new and permanent Parliament House, situated on Capital Hill, Canberra.

An article on the new Parliament House can be found in *Year Book* No. 68.

The powers and life of Parliament

Pursuant to section 1 of the Constitution, the legislative power of the Commonwealth is vested in the Federal Parliament. Parliament cannot legislate without the concurrence of all its parts—the Queen and the two Houses. An exception is a law to amend the Constitution itself in which case special provisions apply: no changes to the law which is the foundation of the Commonwealth of Australia may be made unless, in a majority of States, a majority of the electors voting approve the proposed law, and a majority of all the electors voting also approve the proposed law. The important point to note about law-making is that the people's representatives actually frame the law. The Governor-General gives assent on behalf of the Queen only after the elected representatives have considered, voted upon and, if necessary, amended the proposed law.

Key legislative powers of the Commonwealth Parliament include:

- trade and commerce with other countries and among the States;
- foreign affairs;
- defence;
- postal, telephonic and similar services;
- currency, coinage, etc.;
- banking;
- insurance;
- marriage and divorce;
- invalid and old-age pensions and certain other benefits;
- immigration and emigration.

The Constitution limits the duration of every House of Representatives to a period of three years from its first meeting but provides for an earlier dissolution by the Governor-General. In such matters the Governor-General acts on the advice of the Prime Minister. Unlike the House, the Senate is a continuing body, with Senators being elected by rotation. The Senate cannot be dissolved except that, under section 57, the Governor-General may, in certain circumstances, dissolve both Houses simultaneously.

The sittings of the two Houses of Parliament are, in each year, spread over two periods; one known as the Autumn sittings, the other as the Spring or Budget sittings. The Autumn sittings usually extend from February to June, and the Budget sittings from August to December.

The periods when Parliament is not sitting are popularly known as 'recesses', although the correct term is 'adjournments'. An adjournment does not affect uncompleted business, which may be proceeded with when the sittings resume.

The composition of Parliament

The Queen

Although the Queen is nominally a constituent part of the Parliament, the Constitution provides that she appoint a Governor-General to be her representative in the Commonwealth. The office of Governor-General is of great significance in the operation of the Commonwealth.

The Senate

The Senate, sometimes called the Upper House or Second Chamber, performs two important functions. First, it represents the people of the individual States. Accordingly, the number of Senators elected to represent each State is the same, irrespective of each State's population. Second, and in common with other second chambers throughout the world, it performs the function of reviewing legislation, the great majority of which originates in the House of Representatives, and of ensuring that the executive arm of Government remains accountable to the Parliament. The two major Territories (the Australian Capital Territory and the Northern Territory) are also represented in the Senate.

Each of the six original States has 12 Senators while the two Territories have two each—a total of 76 Senators. Senators for the States are chosen for a term of six years, with half from each State retiring on 30 June of each third year. This rotation principle ensures continuity in the constitution of the Senate, and the six year terms are designed to give Senators greater independence. Senators for the Territories, who were elected for the first time in 1975, are elected for one term of the House of Representatives.

All Senators are elected by the voting system known as proportional representation which, as its name implies, means representation proportionate to the vote received at an election.

The Senate has the same powers of law-making as the House of Representatives, with three exceptions: (1) it cannot initiate Bills appropriating revenue or imposing taxation; (2) it cannot amend Bills imposing taxation and Bills appropriating revenue or moneys for the ordinary annual services of government; and (3) it cannot amend any Bill so as to increase a charge or burden on the people. Where the Senate may not amend a Bill, it may request the House of Representatives to make the amendments the Senate desires. The Senate can reject any Bill, including a Bill it may not amend. It is in the circumstances of a legislative deadlock that the Governor-General may, on the advice of the Government, simultaneously dissolve both Houses—and thus break the continuity of the existence of the Senate.

The House of Representatives

The House of Representatives is the national Chamber of the Federal Parliament, in which the people are represented in proportion to their numbers. The Constitution provides that the number of Members of the House of Representatives shall be, as nearly as practicable, twice the number of Senators. Members of the House are elected directly by people voting in single-member electorates.

The House of Representatives currently has 148 Members. Members are chosen by the preferential voting system: where there are more than two candidates submitting themselves for election, and no candidate has an absolute majority of the votes when first preference votes have been counted, the candidate who receives the smallest number of first preference votes drops out and the second preferences on the ballot papers marked in his favour are distributed among the other candidates. This process is continued until one candidate secures an absolute majority of votes over all other candidates remaining in the count.

A distinctive role of the House of Representatives is that it serves as the foundation for the formation of the nation's Executive Government, for it is the House which determines who shall form the Executive Government of Australia. The leader of the party, or coalition of parties, commanding a majority in the House of Representatives after an election is commissioned by the Governor-General to form a government. The leader of this majority group becomes the Prime Minister, and other leading members are appointed to administer the Departments of State—they become Ministers. The government cannot survive unless the House of Representatives continues, by its vote on major issues, to show confidence in it.

The Ministry

The Ministry consists of the Prime Minister and, in recent times, some 26 other Ministers, who hold portfolios covering areas such as trade; industry, technology and commerce; social security; employment and industrial relations; treasury; immigration and ethnic affairs; foreign affairs; education; Attorney-General; defence; transport; primary industry; health; science; communications; Aboriginal affairs, and veterans' affairs.

It has always been the practice to include some Senators in the Ministry. In addition to representing their own ministerial portfolios, Senate Ministers also present government policies generally and facilitate the passage of government legislation through the Senate. Each Senate Minister represents in the Senate one or more Ministers located in the House. Likewise, each Senate Minister is represented by a Minister in the House of Representatives. Usually about a quarter of the Ministry comes from the Senate. The major spokesman for the government in the Senate, and the Prime Minister's representative there, is known as the Leader of the Government in the Senate.

The Opposition

The next largest party or coalition of parties in the House of Representatives becomes the official Opposition, and its leader is known as the Leader of the Opposition. The Opposition is sometimes referred to as the 'alternative government' because if the government is defeated at an election or loses the confidence of the House it would become the next government.

Whatever party is the government party in the House is also the government party in the Senate—regardless of whether it has a majority in its own right in the Senate. Similarly, whatever party forms the official Opposition in the House is also the official Opposition in the Senate. Smaller parties and Independents in the Senate may oppose the government on a number of issues, but they are not part of the official Opposition.

Office-holders

The Prime Minister and Ministers are officers of the Crown, but effectively hold their positions because of their standing in their party. Similarly, the positions of Leader of the Opposition and Leader of the Opposition in the Senate are party positions, as are those of the Whips in both Houses.

Offices which are distinctively parliamentary are the President of the Senate, the Speaker of the House, and their deputies. If the positions are contested, the occupants are elected in a secret ballot of all the members of their respective Houses. These persons are known collectively as parliamentary office-holders.

In addition there are permanent officers of each House, who are career officials: the Clerk of the Senate and the Clerk of the House of Representatives, who head the departments providing administrative and procedural support for the House and their committees; their deputies and senior officers; and the Usher of the Black Rod and the Serjeant-at-Arms, who have ceremonial and security functions as well as administrative responsibilities.

Parliamentary procedure

The term 'parliamentary procedure' includes forms and methods of proceeding, rules of debate, and recognised parliamentary conventions. Both Houses have their own standing and sessional orders, rulings by presiding officers, and unwritten rules of practice which have developed in the course of transaction of business in each House.

Standing orders

The standing orders are a body of rules, numbering over 400 for each House, drawn up for the proper conduct of the proceedings of that House. Among other things, the standing orders provide for the rules of debate; time limits for speeches; rules for preserving order; the order or routine of business; and rules in connection with presentation of petitions, asking of questions, giving notices of motion, taking of divisions, appointment and procedure of various committees, moving of motions and amendments, the passage of Bills, etc.

System of debate

The process of debate is similar in each House: the subject of most debates originates in the form of a motion (a proposal made by a Senator or Member in order to elicit a decision from the relevant House through a vote). When a motion has been moved, the President or Speaker proposes the question (in the same terms as the motion) which is then subject to debate. At the end of each debate the question is decided either by a vote or a decision 'on the voices'—only a simple majority being required to affirm or negative a question in most cases.

The President, or Speaker as the case may be, presides over the proceedings of the Senate or House and thus is often referred to as a presiding officer. In debate all speeches are addressed to the Chair, who calls upon Senators or Members to speak. In cases of wilful disobedience by a Senator or a Member to the instructions of the Chair, the President or Speaker may 'name' the offender, which usually results in a motion for his or her suspension—for the remainder of the sitting day on the first occasion. In cases of grave and continuous disorder, a presiding officer has power to adjourn the Senate or House or suspend the sitting.

Voting

Voting in each House is carried out under the direction of the presiding officer. In the Senate, each Senator has one vote and questions are determined by a majority of votes. The President is in all cases entitled to a deliberative vote but not to a casting vote, thus ensuring that the States maintain their equal voting strength. If a Senate vote results in equal numbers for and against, the question is resolved in the negative (thus preserving the status quo). All questions arising in the House of Representatives are determined by a majority of votes other than that of the Speaker. The Speaker does not vote unless the numbers are equal, and then has a casting vote.

Legislative proceedings

Under Australia's federal system of government, there is a division of powers between the Federal and State Governments. Sections 51 and 52 of the Constitution list most of the matters with respect to which the Federal Parliament has power to make laws. Those powers may be varied by an alteration of the Constitution through referendum under section 128.

Law-making is the most important function of Parliament. A proposal for a law, once introduced into Parliament, becomes known as a Bill. After finally passing both Houses and receiving the Royal Assent, a Bill becomes an Act of Parliament. The Parliament considers about two hundred Bills a year.

Bills originate in different ways. Much legislation, often of a routine or machinery nature, stems from recommendations made by government departments, while other Bills flow from the undertakings made by a government, perhaps in an election campaign or subsequently. Government legislative proposals can also result from suggestions made by government Senators and Members at party meetings and in the Parliament, or they may come from interested groups in the community. In whatever way a proposal originates, it is considered by Cabinet and, if agreed to, the responsible Minister has his or her department prepare a Bill. Not all Bills originate with the government: private Senators and Members can also introduce Bills. Bills may be originated in either House, with the provision that 'money' Bills (that is, appropriation and taxing Bills) may originate only in the House of Representatives.

Except for certain special procedures on financial measures, the fundamental stages in the passage of a Bill are: presentation and first reading; second reading; committee proceedings; and third reading. The Bill is then transmitted to the other House where it proceeds through the same stages again. If any amendments are made by the second House, these have to be considered by the first House, and be approved (or the disagreement otherwise settled so that each House agrees to the Bill in exactly the same form), before the Bill can proceed to Royal Assent.

The stages, in a little more detail, are:

(i) *Presentation and first reading.* A Senator or a Member, usually a Minister, presents a Bill by handing three signed copies to the Clerk. The first reading follows immediately, and consists in the House of Representatives of the Clerk reading the long (full) title of the Bill. In the Senate a motion—That this Bill be now read a first time—is moved and voted on before the long title is read by the Clerk. Presentation and first reading permits a Bill to be circulated and its contents to become known. The first reading of a 'money' Bill can be debated in the Senate, but not in the House.

(ii) *Second reading*. The common practice is for a Minister, immediately after the first reading, to move the second reading, and then make a second reading speech explaining the general principles of the Bill. At the end of this speech debate is usually adjourned.

Debate on the second reading, except in urgent circumstances, is resumed only after there has been an opportunity to study the Bill. This debate, known as the second reading debate, enables Senators and Members to discuss the merits of the Bill, the policies reflected in it, its consequences, etc. An amendment can be moved to the motion for the second reading and Opposition 'shadow ministers' use this opportunity regularly to place on record any particular views the Opposition may have on the measure. After the motion for the second reading has been agreed to, the Clerk reads the long title of the Bill a second time.

(iii) *Committee*. After the second reading, the President or the Speaker leaves the Chair, the Chairman of Committees takes the Chairman's seat at the Table between the Clerks, and the Senate or House forms itself into a committee of the whole for consideration of the Bill in detail. A Bill may be considered clause by clause or, by leave of the committee, in groups of clauses or as a whole. An amendment may be moved to any part of a Bill provided it is relevant to the subject-matter.

In the House of Representatives, if no member objects, the committee stage may be bypassed and the House proceed to the third reading immediatly after the second reading. In the Senate, however, the standing orders do not permit this, although on occasions the committee stage may be only a formality.

After a Bill has been agreed to in committee, the President or Speaker resumes the Chair, and the Chairman formally reports to him or her that the committee has considered the Bill and agreed to it with (or without) amendment. The Minister in charge of the Bill then moves that the report be adopted. After the adoption of the report, the next stage is the third reading.

(iv) *Third reading*. The Standing Orders of both Houses provide that the third reading of the Bill shall be made an order of the day for the next sitting, but it is now usual practice to move the third reading forthwith.

The motion for third reading may be, but is not often, debated. When the question for the third reading is agreed to, the Clerk again reads the long title of the Bill, which completes its passage.

(v) *Transmission to other House and amendments there*. When a Bill has passed the House in which it was introduced, it is sent to the other House with a message requesting the concurrence in the Bill of the other House. The procedures in the second House are similar to those of the originating House, the Bill again going through first reading, second reading, committee, and third reading stages. With the exceptions imposed by the Constitution on the powers of the Senate to amend certain Bills, the other House may make amendments to the Bill, in which case it is returned by message to the originating House asking concurrence in such amendments. Only when both Houses have agreed to all the provisions in the Bill and any amendments to it can the Bill be said to have finally passed both Houses.

(vi) *Assent*. When a Bill has been finally agreed to by both Houses in identical terms, it is presented to the Governor-General for Royal Assent. Upon assent being given, the Bill becomes an Act of Parliamant, that is, it becomes a law of the Commonwealth of Australia.

Parliamentary scrutiny and control of the Executive

It is fundamental to the concept of responsible government that the Executive Government be accountable to the Parliament. Control of the government is exercised finally by the ability of the House of Representatives to force the government to resign by passing a resolution of no confidence, or by the ability of either House to refuse to pass the Bills which provide the money required for public services.

In addition to the system of close scrutiny of the work of government departments by the committees, referred to below, both Houses offer a number of opportunities for examination of government policy by the Opposition, by other non-government parties and by the government's own backbenchers.

The most prominent of these procedures is Question Time, a period of about 45 minutes in the House and one hour in the Senate each sitting day, during which time Members and Senators respectively are given an opportunity to question Ministers on topical or urgent issues or problems arising in connection with their administration of the portfolios for which they are responsible.

Question Time is invariably a highlight of the sitting day in each House—all Senators and Members are likely to attend, and it is a popular time with visitors. In each House Question Time is a daily demonstration of the accountability of the Executive to the Parliament. Question Time serves as both a forum for accountability and a means for Senators and Members to obtain information.

Two important means for debate on issues of concern or criticism of the government are the daily opportunities to raise 'matters of public importance' (both Houses) or to move urgency motions (Senate only). In addition, Senators and Members are provided with opportunities to raise matters of their own choosing in debates such as the adjournment debate and in special periods when matters of public interest may be raised.

Scrutiny of expenditure

The Parliament appropriates moneys from the consolidated revenue fund on an annual basis in order to fund government expenditure over a given financial year. A number of Acts are passed in each financial year to provide funds without which the government and public services of the country could not continue. These Acts are known as Appropriation Acts and Supply Acts. The debate in the House of Representatives on the second reading of the Appropriation Bill (No. 1) is known as the 'Budget debate' and normally continues over a period of several weeks. While this debate proceeds in the House, the six Senate Estimate Committees examine the detail of the expenditure proposals contained in the Bills, and prepare reports which are then ready for the Senate to consider in conjunction with the Bills once they are received from the House.

Parliamentary privilege

Privilege may be described as the sum of the special rights enjoyed by each House collectively and by Senators and Members individually without which they could not discharge their functions, and which exceed those possessed by other bodies or individuals.

Section 49 of the Constitution provides that the Parliament may declare the powers, privileges and immunities of the Houses, their Members and committees, but that, until it so declares, the Houses, their Members and committees possess the powers, privileges and immunities of the United Kingdom House of Commons as at the establishment of the Commonwealth (1901). It was not until 1987 that the Commonwealth Parliament enacted comprehensive legislation in this area. The *Parliamentary Privileges Act 1987* provides for the usual and essential rights and immunities of the Houses, their Members and committees.

The best known privilege is freedom of speech, which is enjoyed so that Senators and Members, and others participating in properly constituted proceedings of each of the Houses or their committees, such as witnesses giving evidence to committees, cannot be sued or prosecuted for statements made in the course of proceedings of a House or committee.

The Houses possess the power to take action to protect themselves, their Members and committees, against actions or threats of action which constitute improper interference with the free exercise by a House or a committee of its authority or functions, or with the free performance by a Member of his or her duties as a Member.

Parliamentary committees

Parliamentary committees are appointed by the Senate (Senate committees), the House of Representatives (House committees) or by both Houses acting together (Joint committees) to undertake tasks which the Houses as such are not well fitted to perform. Committees are appointed by resolution, under sessional or standing orders, or by an Act of Parliament.

Each committee is composed of a small number of Senators or Members drawn from the political parties represented in the Parliament, and the party in government usually has at least half the representation on a particular committee. The following table summarises information on parliamentary committees.

Committees can be divided into two basic categories: internal and scrutiny. Internal committees are concerned with the administration and procedures of the Parliament and these are sometimes referred to as 'domestic' committees. The privileges committees of both Houses and the Standing Orders Committee of the Senate are examples of such committees. Scrutiny committees oversight the work of the Executive and its administration and carry out much of the detailed investigative and information-gathering work not possible in either chamber.

CLASSIFICATION OF PARLIAMENTARY COMMITTEES

By function, method and House of appointment

	Internal committees: appointed by—				*Scrutiny committees: appointed by—*				*Total committees*
	Standing Orders	*Statute*	*Resolution*	*Total*	*Standing Orders*	*Statute*	*Resolution*	*Total*	
Senate	6	—	1	7	15	—	1+(3)	16+(3)	26
House of Representatives	5	—	1	6	—	—	4	4	10
Both Houses (Joint)	—	1	—	1	—	3	3+(3)	6+(3)	10
Total	**11**	**1**	**2**	**14**	**15**	**3**	**8+(6)**	**26+(6)**	**46**

NOTE: The bracketed figures represent select committees. Only select committees that were operational in June 1986 have been counted in the table.
Sources: Derived from *Senate Notice Paper* (13.6.86) and *House of Representatives Notice Paper* (3.6.86).

From Federation to 1969 there was a relatively slow growth of scrutiny committees. The watershed in scrutiny committee growth was 1970 when the Senate introduced what was to become a comprehensive system of committees by appointing seven (subsequently eight) standing committees, which became known as Legislative and General Purpose Standing Committees, and five (later six) Estimates Committees. From that year onwards there has been a steady growth in the number of scrutiny committees. Of the 32 scrutiny committees included in the table, close to 75 per cent have been in existence for more than ten years.

The work of scrutiny committees can be sub-divided into three broad categories. The first is the scrutiny of legislation. The passage of legislation is the basic constitutional function of the Parliament. Committees that examine legislation assist the chamber by carrying out detailed inquiries and reviews and then reporting back with recommendations.

The second category is scrutiny of non-legislative policy. A large number of scrutiny committees are engaged either exclusively or partly in this work. Their coverage is fairly extensive and the areas of work are self-evident from committee titles, for example, the House committees on Aboriginal Affairs and Environment and Conservation, the Senate committees on Industry and Trade and Social Welfare and the Senate joint committees on Foreign Affairs and Defence.

The third category is concerned mainly with oversight of the government's financial administration: compliance with rules governing the spending of public monies and public sector efficiency. The committees that do this work are the Joint Committee of Public Works, Senate Estimates Committees, the Senate Standing Committee on Finance and Government Operations and the House of Representatives Standing Committee on Expenditure. The Public Accounts Committee (PAC), in particular, has a wide coverage of work associated with the oversight of public administration.

Although the majority of committees undertake work which falls within a single category a number are multifunctional, for example, the Senate Legislative and General Purpose Standing Committees, the Expenditure Committee and the PAC.

Senate Estimates Committees undertake the detailed consideration of annual government expenditure formerly undertaken mainly in committee of the whole. The committees seek explanations on the estimates of expenditure from Senate Ministers and senior public servants. They also ensure that the government, in framing the appropriation Bills, does not infringe Senate rights or agreed convention by, for example, placing expenditures in a Bill which the Senate cannot amend when they should have been placed in a Bill which the Senate can amend.

In May 1978 the Government announced a decision to provide responses to reports from parliamentary committees within six months of the presentation of such reports. The response period was reduced to three months in August 1983. Reponses are made by Ministerial statements or papers presented to either House.

CHAPTER THREE

INTERNATIONAL RELATIONS

The basic principles underlying the shaping and conduct of Australia's foreign policy are that Australia is a significant middle-level power with democratic institutions; having strong affiliations with other Western countries but an emerging Asia-Pacific identity through its increasing regional involvement.

Australia's prosperity is largely dependent on trade; it is geographically remote from its founding nation and principal migration source countries and from some of its major markets and its main allies; it is a relatively affluent and resource rich country in a populous, developing and rapidly changing region.

Initially, Britain and the Commonwealth countries were a central element of Australia's foreign policy and activity. Later, as a consequence of the pre-eminence of the United States in the west and the Pacific during and following World War II, close relations were developed with that country.

While these links, and links with Europe, remain important factors in Australian foreign policy in terms of cultural tradition, security, strategic interests and trade, the specific focus of policy has shifted in the past 25 years to the Asia-Pacific region.

Australia is located in a region which includes the politically, economically and strategically significant countries of East Asia, South Asia, the Indian Ocean and many newly independent nations of the South Pacific. Awareness of the importance of these neighbouring states has led successive Australian Governments to seek to promote and maintain friendly and co-operative relations with them, not only to ensure the stability and security of the region, but also to develop mutually profitable trade, investment, exchange of technology, and co-operation in the development process. Australia gives special attention to its relations with China, Japan, ASEAN (the Association of South East Asian Nations) and its members, New Zealand, Papua New Guinea and the other South Pacific states.

Australia has also been concerned at the increasing instability in the world strategic environment, particularly in South West Asia, Indo-China, the Middle East and Africa, and also at the urgency of the need for effective arms control and a reduction in East-West tensions. Australian foreign policy is committed to an independent constructive approach to those central issues within the framework of the Western alliance.

International issues including economic, disarmament, resources, human rights, refugees, North-South relations, and new concepts of national interest have assumed importance together with an increasing recognition of the growing interdependence of the world community. This is reflected in economic issues, disarmament and arms control and human rights becoming priorities in Australia's foreign policy. Australia recognises the importance and growing complexity of economic issues, particularly the slow recovery of world trade and economic development and the major problem of world debt affecting both developed and developing countries. The growing interdependence of national economic and foreign policies and the increasing vulnerability of Australia's economy to international trade and other developments will remain at the heart of Australia's foreign policy concerns for some time to come. Australia places a high priority on its participation in the resolution of these global issues in the United Nations and other multilateral forums, including the Commonwealth.

The United Nations

Successive Australian Governments have reaffirmed their support for the United Nations (UN), its Charter and the work being done in the various specialised agencies. Within the United Nations and other organisations, Australia seeks to work toward the solution of the pressing problems confronting humanity today.

Australia is involved in a wide range of United Nations matters and has served on many United Nations bodies. It was a member of the Security Council in 1945-46, 1956-57 and

1973–74 and was elected for a further term in 1985–86. The Security Council has primary responsibility for the maintenance of international peace and security. In 1975, a long period of Australian membership of the Trusteeship Council came to an end with the independence of Papua New Guinea. Australia was a long-standing member of the Special Committee on Decolonisation until its withdrawal in January 1985 following UN recognition of the Cocos (Keeling) Islands' decision to integrate with Australia. Australia remains a member of the UN Council for Namibia.

Australia supports the work of the specialised agencies and subsidiary bodies in such areas as development assistance, drug control and human rights. It is an active participant in the economic work of the United Nations, through such forums as the UN Conference on Trade and Development (UNCTAD), the Food and Agriculture Organisation (FAO), the World Food Program (WFP), the UN Development Program (UNDP), and the UN Industrial Development Organisation (UNIDO). Australia also takes an active part in regional consideration of social and economic issues in the Economic and Social Commission for Asia and the Pacific (ESCAP), the United Nation's regional body. Australia is a member of the Commission on the Status of Women. It was re-elected for a further four year term on the Commission on Narcotic Drugs in June 1985. It is on the Executive Board of the UN Children's Emergency Fund (UNICEF), the Governing Council of the UN Environment Program (UNEP) and is a long-standing member of the Governing Body of the International Labour Organisation. Australia is an active member of the UN Education, Scientific and Cultural Organisation (UNESCO) and its prominent role in world refugee assistance is reflected in membership of the Executive Committee of the UN High Commissioner for Refugees.

Australia has made a significant contribution to UN peacekeeping activities since these began. Australia has also contributed its assessed share of the costs of all UN operations, and makes voluntary contributions as well as providing personnel and equipment for peacekeeping forces. At present Australia provides personnel for the UN forces in Cyprus.

Australia is fully involved in the work of the UN on disarmament and outer space, and is a member of the main subsidiary bodies working in these areas.

Australia accepts the compulsory jurisdiction of the International Court of Justice and plays an active role in bodies concerned with the development of international law.

The Commonwealth

The Commonwealth is a distinctive and unique framework which brings together about a quarter of the world's population in 48 countries. Australia through its participation in the broad range of Commonwealth activities, seeks to foster the Commonwealth as an instrument for peace and understanding, and for political, social and economic advancement. Australia hosted the Commonwealth Heads of Government Meeting (CHOGM) in Melbourne in September–October 1981.

South East Asia

Australia maintains wide-ranging relations with the countries of ASEAN (Indonesia, Malaysia, the Philippines, Thailand, Singapore and Brunei), both bilaterally and as a group. These relationships include political, commercial, cultural, defence and wide-ranging personal contacts. There is extensive contact at the senior political level with regular Ministerial visits in both directions.

Australia maintained its regular contact with ASEAN at the level of Foreign Minister at the annual ASEAN Ministerial Meeting–Post Ministerial Conference, which the Australian Foreign Minister attended in Singapore in June 1987.

Relations between Brunei and Australia are developing steadily, especially in the fields of trade, defence and education co-operation. Resource-rich in oil but with limited technical skills, Brunei is beginning to regard Australia as a country from which training assistance can be sought as a purchased commodity. Australia is finding a more internationally active Brunei to be a valued partner in the region.

Indonesia is Australia's closest regional neighbour and straddles its major sea and air routes. Accordingly, Australia has pursued an active relationship with Indonesia, in the areas of commerce, investment, science, defence and culture, and has provided since 1974 over $510 million in bilateral aid. Despite the difficulties that have arisen from time to time, Australia is committed to the maintenance of sound and productive relations with Indonesia at all levels. Efforts are currently underway to explore areas which offer further possibilities for constructive bilateral co-operation, including co-operation on international economic issues where interests coincide. The development of a more substantial trade and commercial relationship also remains a high priority.

Malaysia and Australia have a long history of close and constructive relations, covering the full range of political, commercial and social links. This relationship has adapted well to the political and economic changes within the region, including Malaysia's emergence as a dynamic economic power.

The individual components of the bilateral relationship cover a broad spectrum, notably education, trade and investment, defence and civil aviation. From Australia's view point, Malaysia's level of economic development heightens the advantages of good bilateral relations.

The Philippines is important to Australia because of its strategic location. The bilateral relationship is broadly based. Australia has a substantial development assistance program with the Philippines, and there are important linkages through trade, migration, tourism and defence co-operation.

Australia and Thailand share a range of political, strategic and economic interests, founded on Australia's regional foreign policy interests covering both the South East Asia region and Indo-China. Co-operation in efforts directed against the United States and the European Community subsidisation practices has been an important new aspect of the relationship. Australia's relationship with Thailand is given added substance through development assistance activities, defence co-operation, growing trade links, tourism and co-operation in narcotics control.

Australia has a tradition of close interest in and association with Singapore. Current relations are dominated by the economic and political success of the Republic and the prospect of considerable opportunities for the promotion of Australia's interests. Relations are broadly based, encompassing the whole range of bilateral areas including trade and investment, defence, education, civil aviation, tourism and cultural relations. The major investment links that Australia and Singapore share have contributed to the frequency of exchanges between political leaders and officials of the two countries.

Australia's contribution to the ASEAN organisation underpins its bilateral relations with its member countries. Australia has now committed over $100 million since 1974, to the ASEAN–Australia Economic Co-operation Program which includes a diversity of projects. In 1986 the program was reviewed to give more focus and more relevance to regional needs.

Australia has developed a strong relationship with Burma. Australia's development assistance program is the central feature of the relationship, with $11.7 million allocated in 1987–88.

Australia is concerned by the destabilising effects on the South East Asia region posed by existing disputes. Australia's policy has been to promote dialogue between the major parties in order to reach a peaceful and durable settlement.

Australia is also developing a more mature and comprehensive relationship with Vietnam in the fields of cultural exchanges, trade and aid through multilateral and non-government channels. It is also continuing to develop its relationship with Laos and is providing a small program of development assistance.

Asia

Australia believes that peace and prosperity in Asia depend largely on the countries in the region to co-operate to secure these objectives and in ensuring that no major power, either inside or outside the region, is able to exert an undue influence in the area.

Australia's primary interest and concern in Asia has long been reflected in its vigorous role in regional association and organisations such as the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), the Colombo Plan, the Asian Development Bank and in many other organisations, both private and government. Australia has also been active in the promotion of regional economic co-operation, in particular through involvement in the Pacific Economic Co-operation conference which held its fifth conference in Vancouver in November 1986.

Japan is by far Australia's largest trading partner and a significant source of investment funds, with total trade now in excess of $12,500 million a year. The relationship with Japan is based on complementary economic interests and shared perceptions of international issues. Relations in political, cultural, scientific, sporting and other areas are being fostered by both governments. The then Japanese Prime Minister, Mr Nakasone, accompanied by Foreign Minister, Mr Abe visited Australia in January 1985, reciprocating Mr Hawke's visit to Japan as Prime Minister in January-February 1984. A large number of Ministerial visits between the two countries have taken place in the last year. The ninth Australia Japan Ministerial Committee Meeting was held in Canberra in January 1987. Eight Australian Ministers, including the Minister for Foreign Affairs, attended the meeting which focused on political and strategic issues for the first time.

Australia attaches a high priority to its relations with China. The bilateral relationship has expanded rapidly in the last few years, and now covers a broad range of contacts in many areas. Trade is substantial, and there are exchanges in culture, science, agriculture, education, legal affairs, business management and industrial technology, and the media. The Australia-China Council is active in sponsoring a variety of activities designed to provide a strong, broad foundation for the bilateral relationship. Australia and China engage in frequent political consultations, a process which has been facilitated by an exchange of high-level visits. In April 1983 Australia hosted a visit by China's Premier, Mr Zhao Ziyang, the first Chinese Head of Government to vist Australia, a visit reciprocated by Prime Minister Hawke in February 1984. The Minister for Foreign Affairs, Mr Hayden, visited China in August 1983, and there were visits by eight Australian Ministers to China during 1984. In April 1985, Mr Hu Yaobang, General Secretary of the Chinese Communist Party, visited Australia. High level visits are now very regular, and consideration is currently being given to enhancing the bilateral relationship at all levels. Australia's development assistance program to China has grown rapidly sinçe the the conclusion of a technical co-operation agreement in 1981.

Australia also recognises the strategic, economic and politicial importance of the countries of South East Asia. Although outside Australia's immediate area of strategic concern, these countries sit astride major Australian shipping, civil aviation and communication links. Australia has close relations with all the countries of the region and has recently sought to upgrade relations with them, especially India, which is the most militarily powerful country in the Indian Ocean, the world's most populous democracy, a leading member of the Third World and among the world's largest in terms of industrial output. Australia welcomed in October 1986 the visit of the Indian Prime Minister, Mr Rajiv Gandhi.

The Australian Government does not recognise the present Afghan regime ('the Democratic Republic of Afghanistan'), and has called for the withdrawal of all Soviet troops from Afghanistan. Australia has also expressed concern about nuclear proliferation in the region. The Australian Government welcomed the signing of an agreement in July 1987 between India and Sri Lanka, aimed at a settlement of the Sri Lankan communal problem.

South Pacific

Australia seeks to consolidate and expand its co-operative activities in order to promote the stability, welfare, harmony and economic development of the region. Australia has deliberately moved to develop and extend its bilateral relations with the Island countries, and now has nine diplomatic and consular missions in the area. Australia's aid program in the South Pacific takes account of the special needs of small island nations. A five-year forward indicative planning figure of $300 million for aid to the South Pacific (excluding Papua New Guinea) was approved by the Government in 1983. A further amount for defence co-operation projects in the countries of the South West Pacific was allocated for 1983–84. In 1986–87, $13.068 million was allocated including $5.850 million for the provision of patrol boats for a number of these countries.

As the largest of the South Pacific Island States, Papua New Guinea (PNG) has played an influential and leading role in the region since independence. Australia and PNG have a close and warm relationship which encompasses a broad range of government and non-government activities. Papua New Guinea is the major recipient of Australian aid. Discussions are proceeding between Papua New Guinea and Australian officials on a joint declaration of principles to govern this special relationsip. In 1986–87, Papua New Guinea received $326 million in development assistance. The bulk of this was provided in the form of untied budgetary assistance.

Australia is a member of the South Pacific Forum, the South Pacific Bureau for Economic Co-operation (SPEC) and the South Pacific Commission (SPC), and has become a member of the Forum Fisheries Agency and the other regional intergovernmental organisation, the Committee for Co-ordination of Mineral Resources in South Pacific Off-Shore Areas (CCOP/SOPAC). Australia takes part in meetings of these organisations and the many other regional meetings held in the Pacific to act on a broad range of issues of common interests. Besides contributions to SPEC and the SPC, financial support for other regional and international programs developed in the South Pacific is being maintained. Australia has also established a fund to promote the preservation and development of Pacific cultures. Australia and New Zealand have entered into a non-reciprocal preferential trade agreement in favour of South Pacific Forum States; the South Pacific Regional Trade and Economic Co-operation Agreement (SPARTECA). Australia took part in the 18th South Pacific Forum held in Apia, Western Samoa. Australia is a party to the South Pacific Nuclear Free Zone Treaty (the Treaty of Rarotonga) which entered into force in December 1986.

Relations between Australia and New Zealand are based on shared history, close economic ties and often common approaches to dealing with the current international political and economic environment. Although Australia disagrees with New Zealand's policy on port and air access, other areas of the relationship remain close: the Australia New Zealand Closer Economic Relations Trade Agreement (ANZCERTA), signed in March 1983 and designed to assist both countries to expand their mutual economic and trading links, is a particular demonstration of this. The Australia New Zealand Foundation is another. Both countries are now giving close consideration to the review of ANZCERTA scheduled in the agreement for 1988. The Review will consider both the operation of the Agreement since it commenced and ways in which the further development of the economic relationship might be advanced.

The Americas

Australia has a long-standing relationship with the United States which extends across the whole range of national life. Government-to-government relations are one part of a larger and more extensive interaction between the two societies with interlinked culture and language. In general, relations between the countries are warm and co-operative, with a high degree of official consultation and a close personal relationship between the leaders. The affinity is underpinned by substantial economic and commercial relations which, however, have occasional difficulties.

Canada is a country comparable with Australia in terms of institutions and traditions, geographical size, and international outlook. This has allowed a close degree of co-operation and interchange of ideas between the two countries. Developments in the Caribbean and the Latin American region are of increasing importance to Australia.

Europe

Australia seeks to maintain warm and friendly relations with the countries of Western Europe, with the European Community and its institutions, including the European Parliament.

Bilateral relations with individual Western European countries continue to be of considerable importance.These relations are promoted by the very close cultural and historical links with these countries, and are reinforced by similar approaches to international issues and a shared commitment to democratic values and human rights. Economic ties between Australia and the major Western European economies are likely to be significantly strengthened with the increase of European investment in Australia and the increase in the export of Australian energy resources to Europe.

The European Community (EC) is an important trading partner and a major source of investment funds and technological expertise, as well as a significant importer of Australian raw materials. This natural complementary relationship has however been tempered by tensions caused by trading difficulties in the agricultural sector. Australia nonetheless remains committed to the strengthening of a positive relationship with the EC on the principle of enlightened self-interest.

The fourth round of regular EC–Australian ministerial consultations provided opportunities for Australia to express its concern over EC agricultural politics. The Europeans have to some extent responded by restricting beef exports to traditional Australian markets in South East Asia.

Following the Government's decision in May 1983 to normalise relations with the U.S.S.R., activities have been restored or initiated across a broad range, contributing to the objective of a pragmatic and constructive relationship. Trade has developed and agreement has been reached on renewed programs of exchanges in culture, science and technology.

Eastern Europe is a sensitive area in world affairs and Australia has an interest in the maintenance of a balanced East–West relationship. Eastern Europe has significant potential for Australian exports, particularly commodity exports, although there have been significant debt problems emerging in some Eastern European countries in recent years. The presence in Australia of large ethnic groups, many of which have family in Eastern Europe, has raised the question of freedom of emigration from those countries.

Australia now has diplomatic relations with all countries of Eastern Europe, following the accreditation of the Australian Ambassador in Belgrade to Albania in September 1984.

The Middle East

Australia has substantial trading interests in the area and long-standing friendly relations with the Arab nations, Iran and Israel. Australia supports efforts to bring about negotiations of differences in the region, e.g. in such areas of conflict as the Arab-Israel dispute, the problems facing Lebanon and the Iran-Iraq war. Australia supported the Camp David accords and the peace treaty between Israel and Egypt, seeing them as a first a step towards a just, lasting and comprehensive settlement of the Arab-Israel dispute. Australia supports all efforts to negotiate the dispute, and believes a settlement should be based on UN Security Council Resolution 242 (which, inter alia, recognises the right of all States in the area to live in peace within secure and recognised boundaries and calls on Israel to withdraw from territories captured in 1967) and on recognition of the central importance of the Palestinian issue, including the right of self-determination for the Palestinian people and, if they so choose, the right to independence and the possibility of their own independent State. The Government recognises, however that any such arrangement will depend on decisions involving people of the immediate region. Australia maintains a strict policy of neutrality in the Iran–Iraq war, supporting the UN Security Council in its objective of a ceasefire without preconditions or a comprehensive settlement. This should include a withdrawal of forces to the international boundary, respect for territorial integrity and an end to further attacks by either side. The Australian contingent in the Sinai Multi-national Force and Observers (MFO) which monitors the Egypt-Israel border area was withdrawn in April 1986.

Africa

Australia maintains a broad range of contacts with independent black African States, and is closely concerned with developmental and humanitarian issues affecting Africa. Its strong and continuing opposition to racial discrimination and the apartheid system is reflected by its adherence to the Commonwealth statement on Apartheid in Sport (the Gleneagles Declaration), its adoption of all measures against South Africa agreed by Commonwealth Heads of Government at Nassau (1985) and London (1986) and its active role in encouraging peaceful change in South Africa, most recently through the Commonwealth Eminent Persons Group. Australia is ready to join concerted international efforts to bring further pressure to bear on the South African Government to abolish apartheid, which it regards as an inhuman practice and the root cause of confrontation and violence in Southern Africa. Australia maintains correct but cool diplomatic relations with South Africa. Australia also supports international action to bring Namibia to independence by the negotiated settlement in accordance with United Nations Security Council Resolution 435. Australian aid to Africa is focussed on Eastern and Southern Africa. This includes assistance given through the Southern African Development Co-ordination Conference as well as humanitarian assistance for refugees from apartheid in South Africa and Namibia. Food aid constitutes the dominant share of Australian aid to Africa because of growing food deficits and the continuing famine crisis in Ethiopia and Mozambique.

Indian Ocean

On 17 January 1984, the Minister for Foreign Affairs, Mr Hayden, announced that the Government had approved guidelines for a comprehensive and integrated policy approach to Indian Ocean issues. Under the guidelines Australia will: act in accordance with its status as an independent but aligned Indian Ocean Littoral State; continue to play an active role in the United Nations Ad Hoc Committee on the Indian Ocean; maintain the goal of the resumption of United States–Soviet talks on arms limitations in the region; and support other arms limitations initiatives where these accord with Australia's assessment of its own interests and those of the region as a whole. Australia will also seek to give greater attention to the development of relations with Indian Ocean island States, and, to a lesser extent, East African States. Australia maintains a modest aid program to the smaller Indian Ocean countries.

ANZUS

Following a review in 1983 of the ANZUS Treaty by the Australian Government, including a re-examination with its ANZUS partners at the 1983 ANZUS Council Meeting in Washington, the Government reaffirmed the alliance as fundamental to Australia's national security and foreign and defence policies. The text of the ANZUS Treaty of 1952 can be found in Treaty Series No. 2, for 1952, printed by the then Department of External Affairs. In early 1985, the New Zealand Government implemented a policy not to permit the entry to New Zealand of nuclear powered warships or of warships (or aircraft) which might carry nuclear weapons. Consequently the United States, at the Australia–U.S. ministerial talks in August 1986, formally suspended its security obligations to New Zealand under the ANZUS Treaty pending adequate corrective measures. Both the United States and Australia agreed that the relationship between the United States and Australia under the ANZUS Treaty and the rights and obligations assumed by the United States and Australia towards each other under the Treaty would remain constant and undiminished. ANZUS continues to govern the bilateral defence relationship between Australia and the United States, and that between Australia and New Zealand.

Nuclear issues

Australia's strong commitment to effective disarmament and arms control is reflected in Australian support for the international non-proliferation regime. Australia ratified the Nuclear Non-Proliferation Treaty (NPT) in 1973 and encourages universal adherence to it. Australia is also a member of the International Atomic Energy Agency (IAEA) and, as a member of the IAEA, supports endeavours to strengthen the IAEA's international safeguards system. Australia plays an active role in IAEA committees and in other international bodies dealing with the clarification of multilaterally agreed guidelines on export controls for non-proliferation purposes.

Australia also took an active part in the development of two new important international nuclear safety conventions under IAEA auspices in 1986; the Convention on Early Notification of a Nuclear Accident (CENNA) and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (CACNARE). Australia has signed both conventions, and is taking steps to ratify.

The stringent nuclear safeguards conditions applied to exports and subsequent use of Australian uranium are set out as binding international legal obligations in the bilateral nuclear safeguards agreements which customer countries must enter into before any uranium exports from Australia are permitted. These conditions include an undertaking not to use Australian origin nuclear material for any military or explosive purpose, and the acceptance of IAEA safeguards in order to verify that undertaking. Australia has concluded eleven bilateral nuclear safeguards agreements covering nineteen countries.

Australia is also a member of the Nuclear Energy Agency (NEA) of the Organisation for Economic Co-operation and Development (OECD). Australia values the NEA as an essentially technical forum for international consulation on nuclear issues.

Disarmament and arms control

Australia is energetically promoting arms control and disarmament objectives at the United Nations and the Conference on Disarmament in Geneva. In July 1983 the Government announced the appointment of Australia's first Ambassador for Disarmament whose principal role is to represent Australia on the Conference on Disarmament and at other disarmament forums. Australia attaches particular priority to the earliest possible conclusion of a treaty banning all nuclear testing by all States in all environments for all time (a Comprehensive Test Ban) and is working to uphold and strengthen the Nuclear Non-Proliferation Treaty. Although not a party to any negotiations on reductions of nuclear weapons between the United States and the U.S.S.R., Australia continues to encourage genuine dialogue and a readiness to find accommodation with the aim of stable mutual deterrence. It has called for early agreement on arms reductions and related outer space issues in the current Geneva negotiations. Australia seeks a balanced, mutual and verifiable freeze on the production, testing and deployment of nuclear weapons, which would be followed by deep reductions in nuclear weapons stockpiles. Australia was at the forefront of efforts within the Pacific region which resulted in the endorsement and opening for signature of a South Pacific Nuclear Free Zone Treaty during the meeting of the South Pacific Forum in Rarotonga, Cook Islands in August 1985. Australia also accords priority to a number of non-nuclear disarmament questions. It is committed to supporting the conclusion of a fully effective and verifiable chemical warfare convention that would outlaw the use of chemicals as weapons. Australia will be active in efforts aimed at strengthening the 1972 Biological Weapons Convention by improving its verification provisions. Australia is concerned at the implications for strategic stability of the research into ballistic missile defences being conducted by both superpowers and is pressing for international agreements to prevent an arms race in outer space. Australia has acceded to the following disarmament and arms control agreements: the Partial Test Ban Treaty, the Geneva Protocol (on the Prohibition of the Use in War of Asphyxiating Poisonous or Other Gases and of Bacteriological Weapons), the Outer Space Treaty, the Sea-Bed Arms Control Treaty, the Nuclear Non-Proliferation Treaty, the Biological Weapons Convention, the Environmental Modification Convention, the Antarctic Treaty, and the Inhumane Weapons Convention. Australia was the first signatory to the South Pacific Nuclear Free Zone Treaty on 6 August (Hiroshima Day) 1985.

Economic relations

Economic factors have assumed primary importance in international relations. This is largely due to the growing economic interdependence between nations and the need for global co-operation to solve the problems facing domestic economies, particularly at a time of world recession.

Australia's interest in international economic developments derives from the overall importance of trade to Australia and its historical reliance upon a substantial amount of capital inflow to offset balance of payments deficits on the current account.

The economic recession of the world economy in the 1970s and 1980s has led to the growth world-wide of protectionist pressures and moves towards seeking solutions to economic problems through bilateralism and the formation of trade blocs. The Australian Government has endeavoured to counter these harmful trends and to encourage freer trade through its involvement in forums such as the General Agreement on Tariffs and Trade (GATT). GATT is the principal multilateral institution for negotiation of reduction in trade barriers in pursuit of the further liberalisation of world trade. Australia has consistently supported a reduction in barriers to trade and the concept of an open and multilateral trading system, and is playing an active role in the Uruguay Round of Multilateral Trade Negotiations. In particular, Australia took steps which led to the formation of the 14 member Cairns Group of Fair Traders in Agriculture, which has established itself as an effective proponent of reform in international agricultural trade.

Australia also has a strong commitment to the freedom of international capital flows. Because it is a net capital importer, it is of considerable importance to Australia that the international system be increasingly open and adaptable to facilitate the global exchange of goods, services, labour and capital. This is all the more so in view of the significant challenges imposed on the international monetary system by the dramatic changes in the world economy during the past decade.

Because of its characteristics and location, Australia is vitally dependent on its aviation, shipping and communication links with the rest of the world. Civil aviation has assumed particular prominence in Australia's relations with a large number of countries. Australia's international airline, Qantas, has a well-established network linking Australia with Asia, Oceania, North America, Europe and Africa. Shipping is also of major importance and the maintenance of Australia's interests in the shipping and aviation fields requires a conducive atmosphere in both bilateral and multilateral negotiations.

Australia attaches great importance to its traditional relations with other developed countries, which continue to be Australia's principal trading partners. Membership of the OECD has enabled Australia to take part in consultations on a wide range of policy issues and on issues of international concern with countries experiencing similar social and economic circumstances. At the 1987 Ministerial Council Meeting, Australia played a key role in ensuring that member countries accepted the need for urgent agricultural reform. Macro-economic and structural policy outcomes, combined with trade and agricultural commitments made at the meeting gave a positive impetus to these issues at the Venice Summit in June 1987. The OECD meeting outcome should also give a significant boost to the Uruguay Round process. The Organisation's role in developing its members' policies on relations with developing countries also makes it an important element in Australia's foreign policy. Australia is a member of the International Energy Agency, which has developed into the major forum for continuing consultation and co-operation on energy matters between most of the major industrialised nations which are Australia's principal trading partners.

Law of the Sea

Australia participated in all sessions of the Law of the Sea Conference, the largest and potentially the most important conference in the history of the United Nations, involving major strategic, economic, transport, scientific and environmental issues. The Convention opened for signature on 10 December 1982 and Australia signed that day. It had attracted 158 other signatures by the time it closed for signature two years later. The Convention will enter into force twelve months after it receives 60 ratifications or accessions. The text includes articles on the system of exploration and exploitation of the deep seabed beyond the limits of national jurisdiction; extension of the territorial sea to 12 nautical miles; establishment of coastal state sovereign rights in the living and non-living resources of an "exclusive economic zone" of 200 nautical miles; recognition of coastal state sovereign rights over the exploration and exploitation of the natural resources of the continental shelf, defined in terms of the natural prolongation of the land-mass; protection and preservation of the marine environment; marine scientific research; and the settlement of disputes. Rights of freedom of navigation and passage through straits and archipelagos, which are important to trading nations such as Australia, are also recognized. A preparatory commission for the establishment of the International Seabed Authority and its various organs has been meeting biannually since 1983. Australia has been an active participant in its work.

Antarctica

Australia has had a long association with Antarctica commencing with early expeditions and continuing with an active scientific program. Antarctica's importance to Australia derives from its geographical proximity, the history of Australia involvement there and Australian administration of the Australian Antarctic Territory. Australia maintains three permanent bases in the Territory at Casey, Davis and Mawson (as well as one on Macquarie Island).

As one of the twelve original signatories, Australia attaches particular significance to the 1959 Antarctic Treaty, which serves important Australian scientific, environmental and security interests. Australia hosted the first Antarctic Treaty Consultative Meeting in Canberra in 1961. Such meetings are held about every two years in one of the Consultative Party States, and in 1983 Australia was host to the twelfth meeting. There are now sixteen Antarctic Treaty Consultative Parties.

In 1980, at a conference in Canberra, a Convention for the Conservation of Antarctic Marine Living Resources was concluded. Annual meetings of the Commission and the Scientific Committee established by the Convention have been held at the Commission's headquarters in Hobart since 1982. The Commission is the first international organisation to be established in Australia. Australia has also participated in a series of special consultative meetings to negotiate a regime to regulate the exploration and exploitation of Antarctic minerals.

Treaties

The texts of bilateral and multilateral treaties to which Australia becomes a party are printed in the Australian Treaty Series when they enter into force. The most recent consolidation of the Australian Treaty List was published as Treaty Series 1979, No. 1.

Australia's current position with regard to individual treaties may be ascertained by referring to the 1971 list in conjunction with Cumulative Supplement No. 4 (Treaty Series 1982, No. 10), annual volumes on treaty action in the Treaty Series, and annual volumes on International Treaties and Conventions to which Australia has not yet become a party, in the series 'Select Documents on International Affairs'. These publications are available from Commonwealth Government Bookshops in State capital cities.

Cultural relations

The Department of Foreign Affairs and Trade administers a program of cultural relations overseas known as the Australia Abroad Program. This program supports Australian foreign policy and economic objectives through cultural activities and exchanges. These include tours overseas of all types of performing and visual arts, promotion of Australian literature and literary studies, promotion of general Australian studies, cultural assistance, visitor exchange, book gifts, and sporting gifts and exchanges. Formal priorities have been established for the program, with major emphasis on South East Asia, the South Pacific, North and East Asia, South Asia and Indian Ocean countries. There are also continuing programs in the United States of America and in the U.S.S.R.

Normally, programs are handled as part of the overall bilateral relations with various countries. Cultural agreements have been signed with China, France, Greece, India, Indonesia, Iran (no longer operative), Italy, Japan, Republic of Korea, Malaysia, the Philippines, Romania, Singapore, Thailand, the U.S.S.R. and Yugoslavia.

The Department collaborates closely with other departments, institutions and agencies in the development of the Australia Abroad Program. Its role as co-ordinator of Australian official cultural projects overseas has been endorsed by the Government. The Department seeks to build up programs which will increase understanding and comprehension overseas of Australian society and culture, and thus help foster a favourable environment for the promotion of foreign policy goals. At the same time it seeks to promote professional opportunities for Australian practitioners in all cultural and sporting fields.

Australian foreign aid program 1987–88

The principal objective of the Australian aid program is to promote the economic and social development of developing countries, particularly in our neighbourhood. However, the Australian aid program is also framed with Australian political and economic interests firmly in sight. Australia's foreign policy and bona fides are enhanced by our status as an aid donor. There is also every reason why Australian industry should take part in our aid program, so long as equity and effectiveness remain the primary considerations. The Government, in other words, maintains a balance in the aid program between humanitarian concerns and our political and economic interests.

The effectiveness of Australia's aid program has been reinforced by the continued implementation of changes in the agency responsible for administering the program, the Australian International Development Assistance Bureau (AIDAB).

Australia uses a variety of channels to maximise the impact of its aid using three sub-programs as the main channels and, in 1987–88, it will provide $1,008 million as official development assistance. Of this, $669 million will be provided through its Country Programs. These programs are designed to promote development in designated countries by assisting governments and regional organisations in the planning and implementation of programs and activities to improve economic and social conditions.

Some $271 million has been allocated to Global Programs which aim to promote co-ordinated Australian and international efforts to assist development in Third World countries. They also aim to promote understanding of aid and development issues in the Australian community and to alleviate the suffering of refugees and victims of disaster.

Country Programs

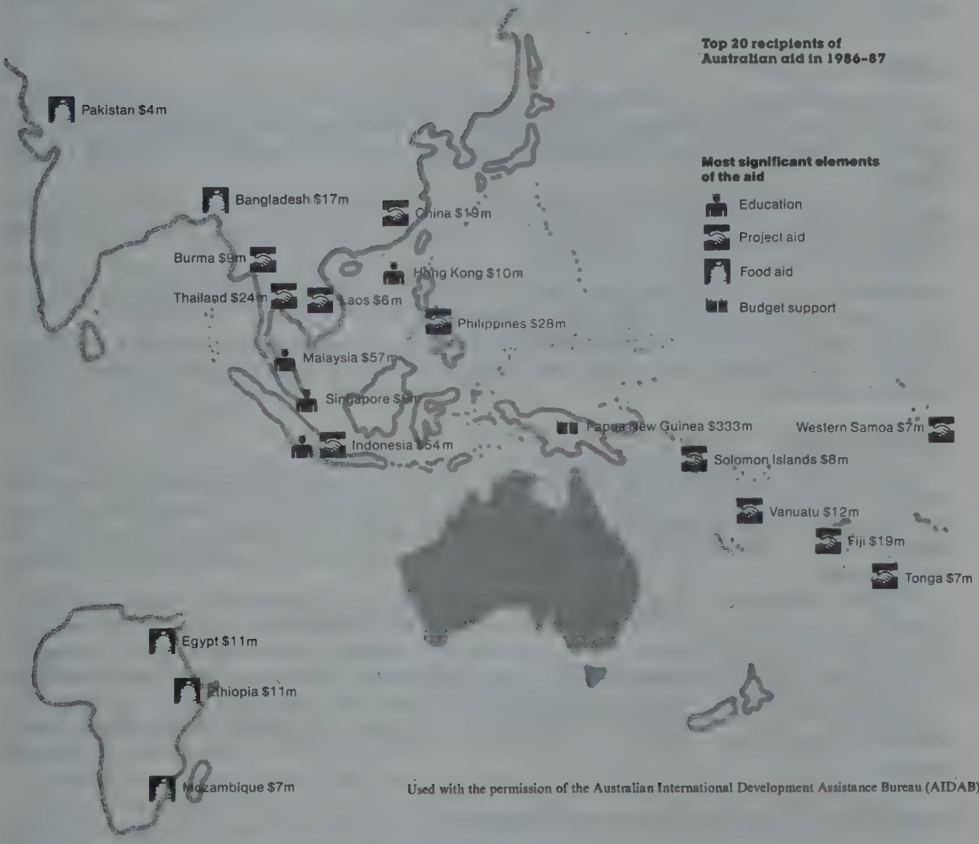
The Australian Government currently provides aid directly to a total of over 90 countries. However, in line with Australia's geopolitical and economic interests, emphasis is placed on providing support to nearby countries in the South Pacific and South East Asian regions.

Most of Australia's direct aid to developing countries other than Papua New Guinea is for specific development activities which range from larger regional development programs to small village projects.

The introduction of country programming of aid has been given high priority to improve the delivery of aid to individual countries.

Strategies for Australian aid are designed in consultation with recipient governments to devise a program which is a mix of project, training, food aid and other forms of aid that both reflect Australia's capacity to assist and which best suit the needs of the recipient country. Support is also provided to individual countries through organisations and programs which focus on regional development activities.

TYPE, VALUE AND DISTRIBUTION OF AUSTRALIAN AID


Top 20 recipients of Australian aid in 1986-87
Most significant elements of the aid
Education
Project aid
Food aid
Budget support
Pakistan $4m
Bangladesh $17m
China $19m
Burma $9m
Hong Kong $10m
Thailand $24m
Laos $6m
Philippines $28m
Malaysia $57m
Singapore $6m
Papua New Guinea $333m
Western Samoa $7m
Indonesia $54m
Solomon Islands $8m
Vanuatu $12m
Fiji $19m
Tonga $7m
Egypt $11m
Ethiopia $11m
Mozambique $7m

Used with the permission of the Australian International Development Assistance Bureau (AIDAB)

Australia's training program is designed to help recipient countries develop the human resources they need for their economic and social advancement. Governments may nominate candidates for formal postgraduate academic studies at Australian tertiary institutions or short practical courses funded by AIDAB, including those offered by the Bureau's International Training Institute. Other forms of assistance include institution support, placements at regional institutions and country specific training packages undertaken either in Australia or in-country. In 1987–88, the estimate of contributions towards the education of developing country students is $85.2 million.

Australia is responding to world food problems in two ways: by addressing the short-term problem of food shortages with food aid; and by helping developing countries supply more of their own food requirements through the provision of appropriate long-term development assistance. In 1987–88, Australia is expected to spend $88 million on its food aid program.

Papua New Guinea and South Pacific

Papua New Guinea has been allocated $301 million in 1987–88. Most of this assistance will be provided in the form of direct budget support grants. This support is expected to represent about 23 per cent of total PNG budget receipts or around 80 per cent of its expected total aid receipts. As agreed between the PNG and Australian Governments, there will be a continuation of the movement away from this form of aid towards direct support of individual aid activities including project aid, education and training, assistance for students and co-financing with international agencies and development banks.

Australia's aid program in the South Pacific ($68 million in 1987–88) extends to Fiji (although assistance was suspended in 1987 following political turmoil in that country), Solomon Island, Western Samoa, Vanuatu, Tonga, Kiribati, Tuvalu, Cook Islands and Niue. It also includes aid provided on a multi-country or regional basis.

1987–88 marks the last year of the five year pledge of an Indicative Planning Figure (IPF) of $300 million made to the Pacific Island countries at the 1982 Rotorua Forum.

South East Asia

Australia provides a broad range of forms of assistance to the region, including project aid, training assistance for students, co-financing and technical assistance supporting over 60 projects in South East Asia. A total of $118 million has been allocated in 1987–88 for the region.

Indonesia, with an allocation of $44 million, is the largest recipient of project aid. Other major recipients of bilateral aid under the South East Asia program are the Philippines ($24 million) and Thailand ($20 million).

Support is also provided for regional organisations and programs, e.g. the ASEAN–Australia Economic Co-operation Program (AAECP) and the Economic and Social Commission for Asia and the Pacific (ESCAP).

The success of the aid program in South East Asia has reinforced Australia's reputation as a developed country with a genuine concern for the welfare and development of its regional neighbours.

Other regions

Australian assistance to other regions of the world is concentrated on much more specific economic sectors in which Australia has particular expertise and will total $85 million in 1987–88. Of this, $18 million has been allocated to China where the aim of Australia's aid program is to assist the Chinese people's social and economic advancement through modernisation.

The aid program in Burma has been allocated $11.7 million while in Southern Africa Australia will embark on a three year program of aid at an estimated total cost of $55 million. This will provide for assistance to the nine member states of the Southern Africa Development Co-ordination Conference (SADCC) to the SADCC organisation itself and to expand the Special Assistance Program for black South Africans and Namibians.

Other regions and countries benefiting from Australian aid are the Indian Ocean island states and Egypt where food aid continues to be the significant component of the aid program.

International organisations and programs

As a responsible member of the international aid community, Australia accepts its obligations to support a range of key international financial and development institutions. These organisations can provide aid on a scale or in sectors which may not be appropriate for a single donor. Australia's active participation in these agencies enables it to have a policy influence on each institution's activities, as well as to make use of their particular expertise in formulating Australia's own aid strategies and programs. It also allows Australia to provide assistance in areas which are outside its sphere of technical expertise, comparative advantage or access.

In 1987–88, Australian contributions, administered by AIDAB, to international organisations will be $166 million. They will include voluntary contributions amounting to $62 million to a selection of the more effective development agencies of the UN system such as UNDP, UNICEF, and WFP. International financial institutions such as the World Bank and the Asian Development Bank have been allocated $85 million. Commonwealth programs and a number of specialist international non-government agencies and development and research institutions will also be supported in their development activities.

Emergencies and refugees

Australia provides assistance in cash and kind for emergencies and natural disasters in developing countries.

The channelling of the emergency aid is through a variety of agencies depending on the nature of each emergency. In 1987–88, $40 million will be provided to allow for an Australian response to emergency, disaster and refugee situations. Assistance includes food aid, temporary housing materials and grants.

Australia also supports the general programs of a number of organisations by making contributions to their core budgets. These include the UN High Commissioner for Refugees and the UN Relief and Works Agency. Australia also provides assistance for disaster preparedness and prevention measures.

Community and commercial programs

The Australian public has consistently demonstrated its concern about poverty in the developing world. The government provides funds to subsidise the development projects and relief activities of non-government organisations. These agencies provide development and emergency aid from funds raised directly in the community, on a much larger scale than the subsidies they receive from the government. They undertake a range of development projects, development education and volunteer programs. A total of $11 million has been allocated to voluntary agencies in 1987–88.

The direct participation of the academic and research community in the aid program is also encouraged and $24 million has been allocated to these activities.

In line with the stated government policy, the promotion of Australia's political-strategic and commercial interests respectively are among the primary objectives of the aid program. AIDAB promotes Australian commercial interests within this policy framework through business liaison activities.

Australia's mixed credit scheme, the Development Import Finance Facility (DIFF), provides opportunities for Australian business to supply developmentally important goods and services. Mixed credits combine grant aid funds with commercial export credits to provide 'soft finance'.

The operations of the DIFF scheme have been significantly streamlined following a review in 1986–87. Allocations to the scheme will be $30 million in 1987–88.

Consular services and passports

The Department of Foreign Affairs and Trade is responsible to the Minister for the protection and welfare of Australian citizens and their interests overseas. Consular services to the Australian public are available from Australian diplomatic and consular posts throughout the world.

Australia's consular service continued to operate effectively and to cope with a greater volume of inquiries attributable to a continuing increase in Australian tourism abroad. In 1986–87, Australia's overseas posts dealt with over 125,000 requests for consular assistance, including 229 cases of Australians dying abroad and the arrest of 146 persons.

Policy developments during the past year included advanced discussions concerning consular agreements with several East European countries, and a decision to compensate Australian POWs who were illegally interned in German concentration camps during World War II.

The past year also marked the continuation of a determined effort by Australia to research and develop consular policies which will more clearly reflect Australian values, open government and Australia's commitment to the defence of its citizens' human rights.

These developments are largely in response to public expectations and recognition of the importance of an effective consular service.

Since 1 July 1984 all passport applicants have been required to lodge their applications in person. Some 80 per cent of all applications are now handled by Post Offices. The telephone information service for passport clients has been centralised so that country dwellers are treated similarly to those from the city. In 1986 almost 700,000 passports were issued.

Australian representation overseas

As at 30 June 1987, Australia maintained the following diplomatic and consular representation overseas (full details of these missions are available from the Department of Foreign Affairs and Trade, Canberra, A.C.T. 2600).

Embassies

Abu Dhabi (in Ryadh); Albania (in Yugoslavia); Algeria; American Samoa (in Western Samoa); Angola (in Zambia); Argentina; Austria; Bahrain (in Saudi Arabia); Belgium; Bolivia (in Chile); Brazil; Bulgaria (in Yugoslavia); Burma; Chile; China; Columbia (in Venezuela); Comoros (in Mauritius); Costa Rica (in Mexico); Czechoslovakia (in Poland); Denmark; Ecuador (in Venezuela); Egypt; El Salvador (in Mexico); Ethiopia; Finland (in Sweden); France; French Polynesia (in New Caledonia); Gabon (in Nigeria); German Democratic Republic (in Poland); Germany, Federal Republic of; Greece; Guatemala (in Mexico); The Holy See; Honduras (in Mexico); Hungary; Iceland (in Denmark); Indonesia; Iran; Iraq; Ireland; Israel; Italy; Ivory Coast (in Switzerland); Japan; Jordan; Korea, Republic of; Kuwait (in Saudi Arabia); Laos; Lebanon; Luxembourg (in Belgium); Madagascar (in Mauritius); Maldives, Republic of (in Sri Lanka); Mexico; Mongolia (in U.S.S.R.); Morocco (in France); Mozambique (in Zimbabwe); Nepal; Netherlands; Nicaragua (in Mexico); Norway (in Sweden); Oman (in Saudi Arabia); Pakistan; Panama (in Venezuela); Paraguay (in Argentina); Peru (in Brazil); Philippines; Poland; Portugal; Qatar (in Saudi Arabia); Romania (in Yugoslavia); Saudi Arabia; Senegal (in Switzerland); Somalia (in Kenya); South Africa; Spain; Sudan (in Egypt); Sweden; Switzerland; Syria; Thailand; Tunisia (in Algeria); Turkey; Union of Soviet Socialist Republics; United Arab Emirates (in Saudi Arabia); United States of America; Uruguay (in Argentina); Venezuela; Vietnam; Wallis and Futura Island (in New Caledonia); Yemen Arab Republic (in Saudi Arabia); Yemen, Peoples Democratic Republic of (in Saudi Arabia); Yugoslavia.

High Commissions

Antigua & Barbuda (in Jamaica); Bahamas (in Jamaica); Bangladesh; Barbados (in Jamaica); Bermuda (in Canada); Botswana (in Zimbabwe); Brunei; Canada; Cyprus; Dominica (in Jamaica); Fiji; The Gambia (in Nigeria); Ghana (in Nigeria); Grenada (in Jamaica); Guyana (in Jamaica); India; Jamaica; Kenya; Kiribati; Lesotho (in South Africa); Malaysia; Malawi (in Zambia); Malta; Mauritius; Nauru; New Zealand; Nigeria; Papua New Guinea; St Lucia (in Jamaica); St. Vincent and the Grenadines (in Jamaica); Seychelles (in Mauritius); Sierra Leone (in Nigeria); Singapore; Solomon Islands; Sri Lanka; Swaziland (in South Africa); Tanzania; Tonga; Trinidad and Tobago (in Jamaica); Tuvalua (in Fiji); Uganda (in Kenya); United Kingdom; Vanuatu; Western Samoa; Zambia; Zimbabwe.

Other

Mission to—European Communities (Brussels); United Nations (New York); United Nations (Geneva); UNESCO (Paris); Organisation for Economic Co-operation and Development (Paris); United Nations Industrial Development Organisation (Vienna); UN Economic and Social Council for Asia and the Pacific (Bangkok); International Atomic Energy Agency (Vienna); Food and Agriculture Organisation (Rome); International Civil Aviation Organisation (Montreal).

Consulate-General in—Auckland; Bombay; Chicago; Frankfurt; Hong Kong; Honolulu; Houston; Jeddah; Los Angeles; Milan; New York; Noumea; Osaka; San Francisco; Shanghai; Toronto; Vancouver.

Consulate in—Bali; Edinburgh; Geneva; Manchester.

Specialist officers of the Department of Foreign Affairs and Trade, other Australian Government departments and the Defence Services stationed abroad are attached to Australian diplomatic or consular missions. Senior attached officers are in some cases accredited to the missions with diplomatic or consular ranks approved by the Minister for Foreign Affairs and Trade.

THE DEPARTMENT OF FOREIGN AFFAIRS—A BRIEF HISTORY

(*This special article has been contributed by the Department of Foreign Affairs and Trade*)

The Department of External Affairs, as it was first named, was one of seven departments of State created in 1901 to service the new Australian Federal Government in Melbourne. It was curiously titled in that the six federating colonies very explicitly had declared their aversion to independence from the British Empire centered on London. The Federation saw independence as the probable ultimate point in Australia's evolution; for the time being, they preferred the economic and military comfort to be had in a powerful empire and for them and for the Imperial Parliament which gave its legitimising blessing to the enterprise, the new colonial Federation was no more self-governing or independent than had been its component colonies, now called States. Moreover, while the colonies were happy to surrender their potential for separate evolution towards independence, they were jealous enough of their separateness to want only limited union and they carefully limited the functions granted to the new Federal Government.

One function which the colonies did grant however, was primacy in dealings with London, the Federation's only legitimate point of contact with the world outside. The early federal Prime Ministers, whether also Ministers for External Affairs or not (and most of them were), used the Department of External Affairs as their secretariat, primarily for their dealings with London through the Governor-General in Australia and the British Colonial Office. When the Prime Minister's Department was instituted in 1911, the Department of External Affairs lost its principal *raison d'etre*, and in 1916 it was abolished.

After the World War I, international politics quickly centered on individual nation States rather than empires and when the League of Nations was established in a serious effort to resolve world conflict, its covenant was so framed as to allow membership to self-governing colonies like Australia.

Australia was as anxious as ever to remain part of a strong British Empire, but separate membership of the League of Nations after the War forced on her a degree of separate international political activity. For one thing, she now administered the former German colony of New Guinea under mandate, with accountability to the League. It was mainly to meet obligations associated with League membership that, in 1921, a Department of External Affairs was re-established in Melbourne (the seat of Federal Government not moving to Canberra until 1927). This, though, was a department more in name than in fact: its Minister until 1932 was the Prime Minister of the day, its permanent head was the permanent head of the Prime Minister's Department, and it enjoyed no separate budgetary allocation. In fact, it functioned as, and was known as, the External Affairs branch of the Prime Minister's Department.

During the 1920s complex and subtle changes were made to relations between the United Kingdom and the white settler societies overseas—so subtle that scarcely anyone in Australia at the time fully comprehended their significance. One outcome was that where formerly Australian federal Ministers had access to the crown through United Kingdom Ministers, now only Australian Ministers would advise the crown on Australian federal matters, and the monarch's representative, the Governor-General, no longer would be as well the agent of the United Kingdom government. This meant that Australia now could engage in separate diplomatic dealings with foreign States. However, Australia still saw herself as essentially a British State and for economic, strategic and sentimental reasons, Australian governments, always fearful of threat to Australia's long lines of communication, were in no hurry to take Australia into independent diplomacy. Australia had been pulled along unwillingly in the 1920s in the wake of Canada, the Irish Free State and South Africa which differed from Australia in history and ethnic composition and, in the case of the former two, could relax in their physical proximity to great powers which must defend them in defending themselves.

It was not until 1935, therefore, that an Australian Federal Government, reacting to an ominous international situation, created at least the potential for an Australian foreign office.

The Department of External Affairs in 1935 was separated from the Prime Minister's Department and given its own permanent head (Colonel W. R. Hodgson, whose background was in military intelligence) and its own budgetary allocation. It was a tiny department of half a dozen officers with little experience in international diplomacy. The Department began at once to recruit university graduates but, when it was decided in 1939 that Australia should proceed to open diplomatic posts overseas, the Department could not yet provide officers to head those posts. The first Minister to the United States in 1940 was R. G. Casey, formerly Minister for Supply, though in the 1920s an officer of the Department; the first Minister to Japan in the same year was Sir John Latham, Chief Justice of the High Court, though in 1932–34 Minister for External Affairs; the first High Commissioner to Canada, also in 1940, was Sir William Glasgow, a former soldier and politician; the first Minister to China in 1941 was Sir Federic Eggleston, a former Victorian politician. It was not until 1945 that career officers from the Department were thought ready to serve as heads of mission.

A feeling that Australia had suffered for lack of her own sources of information in the late 1930s, fear of physical vulnerability during World War II, the post-war emergence of nation states in Asia under indigenous governments and renewed emphasis on international organisation for the peaceful resolution of conflict all impelled Australia in the 1940s and early 1950s to rapidly expand the Department of External Affairs. Well into the 1950s the Department still had to look outside its own ranks for heads of mission. Some posts were held to be of such crucial significance as to need the appointment of former Cabinet Ministers able to speak for Australia with special knowledge and authority, and it was not until 1964 that a career diplomat was made ambassador in Washington (J. K. Waller) and even later (1980) before another man went to London as High Commissioner (Sir James Plimsoll). A High Commission in London, it might be noted, had been opened back in 1910 but for many years the High Commissioner was seen as little more than manager of Australia House, home to public servants working in London. Even after changes in imperial relations in the 1920s, High Commissioners in British countries were taken to represent government rather than heads of state—a distinction which survives to this day. In fact, because as a colonial Federation Australia at first limited its external dealings to London through the Prime Minister, the High Commission in London was administered by the Prime Minister's Department until 1972.

Australia has never had an elite diplomatic service separated from the rest of the federal public service but the Department has always handled its own recruitment and, apart from a few years in the 1940s when non-graduates were accepted, it has chosen graduates according to demanding criteria. By 1950 the selection policies were paying dividends and the Department and its diplomatic service seemed to have talent to spare; its officers on a number of occasions being appointed to senior positions in other departments. It was at this time also that the first experienced diplomat was appointed as the Department's permanent head and at last a truly professional foreign service had emerged in Australia.

Although the days of the Department's constant expansion are largely past, its activities remain substantial. Since the 1940s, and irrespective of parties in power, it has been accepted in Canberra that Australia's survival and prosperity cannot be assured by military power or even solely by alliance diplomacy and that Australia's best strategy for survival lies in adopting an active and constructive international profile. This led Australia from the first to take a very active role at the United Nations and in the various organisations operating under its umbrella. It has also led Australia to react positively to the emergence of a host of states in the wake of the great decolonisation process which has been in train since the 1940s. Whereas at its birth in 1935 the Department serviced no missions overseas, it now handles relations with close to 150 countries from more than 90 overseas missions.

Today the Department has a staff of 1,770 officers in Canberra and 800 overseas, with a further 2,000 locally recruited staff overseas. Large and sophisticated communications systems and computerisation help cope with the need for frequent and immediate decision making from Canberra to all parts of the world. Some things have inevitably been lost. When the Department, like Canberra itself, was young and small, officers were known to take their dogs to work with them and one officer even rode a horse to work. There was a camaraderie which could not survive the great expansion.

CHAPTER FOUR

DEFENCE

This chapter outlines Australia's defence policy and its defence relationships with other countries; the higher Defence organisation, the functions, organisations, manning and training of the three Services; the functions and activities of the Defence Science and Technology Organisation, the Natural Disasters Organisation and the Office of Defence Production.

Further information on current defence planning and activities is available in the Defence Report and other publications of the Department of Defence, and in statements to the House of Representatives by the Minister for Defence.

Two special articles are included at the end of the chapter—one covering the history of Australians at war, and the other outlining the background and activities of the Australian Defence Force Academy.

Current defence policy

Australian defence policy is primarily directed to the development of independent and, within resource constraints, increasingly self-reliant defence capabilities to deter and, if necessary, defeat military threats against Australia and its direct interests.

Planning for Australia's defence is not based on meeting particular threats. Rather it recognises that there are a number of possible contingencies which, were they to arise, would have consequences for our security. Particular attention is given to the capabilities of the Defence Force to deal with lesser threats or contingencies, such as limited harassments, raids, incursions, etc., that could arise at short notice and to ensure that there are options for a future government to expand defence capability in response to changes in the strategic outlook.

The security and stability of our immediate geographic region is of major strategic importance to Australia, and the continued development of an independent defence capability enhances our ability to contribute to peaceful development within the region. Priority in defence activity is consequently given to areas close to Australia and high value is placed on fostering defence relationships with countries of South East Asia and the South West Pacific.

Australia's security arrangements with the United States and New Zealand remain an important element of our defence policy. Although trilateral defence co-operation activities under the ANZUS alliance have been in abeyance due to the New Zealand government's policy on visits by nuclear-powered and nuclear-weapon capable warships, the ANZUS Treaty itself remains in force and continues to provide a background for a wide range of mutually beneficial bilateral defence co-operative activities with the United States. At the same time co-operative activities undertaken with New Zealand continue to sustain Australia's close defence relationship with that country.

Higher Defence organisation

The higher organisation of the Defence Force is dealt with in the *Defence Act 1903*, which provides that responsibility for the general control and administration of the Defence Force rests with the Minister for Defence. Under arrangements introduced in 1987, the Minister for Defence Science and Personnel has particular responsibilities within the Defence portfolio for the oversight of the Defence Science and Technology Organisation and of Defence Force personnel matters.

Chief of the Defence Force

Under section 9 (2) of the *Defence Act 1903*, the Chief of the Defence Force (CDF) is vested with the command of the Defence Force subject to general control by the Minister.

The CDF is the chief military adviser to the Minister and is responsible for the planning and conduct of military operations and advice on military strategy and military aspects of defence capabilities necessary to meet government policy. In addition the CDF has, with the Secretary, joint responsibility for administration of the Defence Force as specified below.

Secretary, Department of Defence

Under the Minister, the Secretary has the normal powers and responsibilities of a departmental Secretary under the Public Service Act, the Audit Act and Finance Regulations. In addition to these powers, section 9A of the *Defence Act 1903* makes the Secretary and the Chief of the Defence Force, subject to control by the Minister, jointly responsible for the administration of the Defence Force (except for the matters falling within the command of the Defence Force or any other matter specified by the Minister). The Secretary is the principal civilian adviser to the Minister for Defence and is responsible to the Minister for advice on policy, resources and organisation and the correct and proper use of public funds.

Higher Defence machinery

An extensive committee system operates in the higher Defence organisation to facilitate the formulation of policy for the achievement of government defence objectives. It also facilitates decisions on matters of defence administration, including resources management, and on Joint Service planning and doctrine. The more important committees are described below.

The Council of Defence

The Council of Defence considers and discusses matters relating to the control and administration of the Defence Force referred to it by the Minister for Defence. The Council is chaired by the Minister for Defence, and membership comprises the Minister for Defence Science and Personnel, the Secretary to the Department of Defence, the Chief of the Defence Force, the three Service Chiefs of Staff, and the Vice Chief of the Defence Force.

The Defence Committee

This Committee is chaired by the Secretary to the Department of Defence with the Chief of the Defence Force, the three Chiefs of Staff, and the Secretaries to the Departments of the Prime Minister and Cabinet, Treasury and Foreign Affairs and Trade as members. The Committee advises the Minister for Defence on defence policy as a whole, the co-ordination of military, strategic, economic, financial and external affairs aspects of defence policy, and matters of policy or principle and important questions having a joint service or interdepartmental aspect.

The Defence Force Development Committee

The Committee is chaired by the Secretary to the Department of Defence, with the Chief of the Defence Force and the three Chiefs of Staff as members. It advises the Minister for Defence on force development and the management of resources, including major equipment and facilities acquisitions and formulation of the Five Year Defence Program and annual budget estimates.

The Chiefs of Staff Committee

The Chiefs of Staff Committee is responsible to the Minister for Defence through the Chief of the Defence Force, who is chairman of the Committee. Its principal function is to provide advice to the Chief of the Defence Force, including professional single-service advice, to assist him in discharging his responsibility for command of the Defence Force.

Equipment for the Defence Force

An amount of $2,055 million was spent on equipment of a capital nature in 1986–87. An amount of $1,862 million is expected to be spent in 1987–88.

Expenditure on major capital equipment in 1986–87 continued to be dominated by commitments arising from already approved projects. These included:

- the F/A-18 tactical fighter aircraft and associated equipment (26 now delivered);
- 39 S-70A-9 Black Hawk utility helicopters to be assembled at Hawker de Havilland, Bankstown;

- 16 Sikorsky S70B-2 Seahawk helicopters, the first two being built in the U.S. and the remaining 14 will be assembled by Hawker de Havilland, Bankstown;
- 6 new submarines to be built in Australia and assembled at Port Adelaide;
- 2 FFG07 Class guided missile frigates under construction at Williamstown Dockyard;
- 67 Pilatus PC9 trainer aircraft being produced by Hawker de Havilland, Bankstown;
- the modernisation of the DDG destroyers at Garden Island.

New major capital equipment items approved in the 1987–88 Budget context include:

- development and testing of initial production Towed Acoustic Arrays, and the establishment of a design and manufacturing capability within Australian industry for the Australian developed Laser Airborne Depth Sounder;
- further development of the ANZAC ship project involving project definition work.

EXPENDITURE ON DEFENCE FUNCTION

($'000)

	Actual expenditure					
Category	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*	*1986–87*
Department of Defence						
Capital Equipment	533,581	859,120	1,213,411	1,613,943	1,841,826	2,055,252
Capital Facilities	179,035	204,109	246,409	256,793	293,930	398,530
Defence Co-operation	39,676	44,209	45,644	45,331	50,099	54,609
Personnel	2,064,836	2,186,375	2,252,259	2,354,092	2,592,224	2,607,449
Other Running Costs	1,156,921	1,318,514	1,405,200	1,536,168	1,702,966	1,925,016
Total	*3,974,049*	*4,612,327*	*5,162,923*	*5,806,327*	*6,481,045*	*7,040,856*
Other Departments—						
Capital Facilities	9,180	13,395	16,034	13,229	19,121	(*a*)334
Personnel (includes Remuneration Tribunal and Defence Force Retirement and Death Benefits)	246,056	279,714	324,015	366,587	432,518	483,199
Other Running Costs	32,749	34,186	34,600	43,032	49,408	53,780
Total	*287,985*	*327,295*	*374,649*	*422,848*	*501,047*	*537,313*
Total Expenditure on Defence Function	**4,262,034**	**4,939,622**	**5,537,572**	**6,229,175**	**6,982,092**	**7,578,169**
Acquisition of Special Purpose Boeing 707 aircraft	289	103	30	69	..	..
Total Defence Expenditure	**4,262,323**	**4,939,725**	**5,537,602**	**6,229,244**	**6,982,092**	**7,578,169**

(*a*) In 1986–87 consultants engaged by Department of Housing and Construction for Defence was accounted for in Defence Capital Facilities for the first time (Division 247); residual is expenditure managed by the National Capital Development Commission for Defence.

Defence industry

In March 1987, the Government White Paper on the Defence of Australia provided definition of its policy of defence self-reliance, and laid down priorities including industrial support measures. Following a Review of Australian Defence Exports and Defence Industry which was completed in 1986, the Government had previously announced in October 1986 a package of measures designed to facilitate the export of defence materiel from Australia.

The Government has reaffirmed that an effective defence policy for industry cannot be formulated except as an integral part of defence policy. In recognition of the important role industry has to play in meeting requirements for defence self-reliance, the Government has set out a comprehensive program to assist industry in fostering defence capabilities and involving itself more intensively in the support, maintenance and development of the Australian Defence Force. The basic principles guiding this initiative are followed in defence capital equipment procurement under a program of Australian Industry Involvement (AII).

The capacity of industry to maintain, repair, modify and adapt defence equipment independently of overseas sources is fundamental to the self-reliant defence of Australia and the development of this capacity is a prime defence policy objective. Over 90 per cent of defence expenditure on repair and maintenance is incurred in Australia.

The adequate supply of replacement equipment and stores (that is, munitions, spares and other consumable items) is also fundamental to Australian ability to sustain military operations. In meeting the Defence Force's requirements for these items, priority is given to local manufacture when defence requirements are sufficient to justify establishment of the requisite capacity and where proprietary manufacturing rights and warranty requirements permit. Over 70 per cent of defence expenditure on replacement equipment and stores is incurred in Australia.

The Defence program of Australian Industry Involvement (AII) in defence equipment acquisitions provides significant benefits to Australian industry. Since January 1986, when revised AII program procedures became effective, contracts placed for capital equipment have totalled $4,032 million within which the AII element has been worth $2,629 million or 65 per cent of the total of contract prices. Offsets included in this AII level were worth $612 million, representing 30 per cent of the imported value of the contracts.

Australian industry participation in the defence equipment acquisition program, and in response to the government's increased incentives to promote the export of defence materiel, has resulted in significant achievements. For example, production under licence of Australian developed equipment has generated export orders for muzzle velocity indicators, which are used to enhance the accuracy of naval and field artillery, and the video movement detector, for video security systems. Other prospects for export orders are an improved multiple stores bomb rack for the F/A-18 aircraft and a laser target designator/range finder for use with airborne precision munitions.

Other defence equipment acquisition projects to which industry is expected to contribute significantly include:

- The new submarines, six of which are to be built in Australia by the Australian Submarine Corporation at a cost of some $3,900 million (over 70 per cent of the total project value will be spent in Australia).
- A second, Australian designed, inshore minehunter has been launched from Carringtons Shipyard in Newcastle (this complex project introduces new concepts of design and production into Australia).
- Contracts were signed with Jaguar Rover Australia Ltd (JRA) in October 1986 for the provision of 2,500 one-tonne and 400 two-tonne Ford Rover 110 vehicles (these are being manufactured in Australia with a high level of Australian content and at a contract price of $145.09 million).
- A contract was signed in May 1987 with Plessey Pacific Defence Systems Pty Ltd for the initial production of 5,937 radios and ancillaries as well as maintenance and frequency management sub-systems (local production of these radios and ancillaries will provide a significant improvement to the Australian high technology manufacturing base).
- Hawker de Havilland is assembling 38 Black Hawk helicopters, at Bankstown.
- A contract for 67 Pilatus PC9 trainer aircraft was signed in July 1986 with 65 of these being built in Australia.

The government continues to accord priority to developing within local industry the range of technologies and supply and support capabilities (including design, development, and manufacture) identified as meeting the longer term needs of the Defence Force in accord with government policy and Defence guidance.

Defence Logistics Organisation

The Defence Logistics Organisation (DLO), created in December 1984, has since been expanded. In addition to the Supply, Technical Services and Logistic Development and Facilities Divisions and the engineering chiefs of the Services, the Logistics Computing Centre was created and placed in the DLO in July 1986 as a result of a Departmental policy to decentralise information systems. In July 1987, the DLO was further expanded and now encompasses the Information Systems Policy Division and the Defence Contracting Branch.

Briefly, the Divisions and their functions are:

- *Supply Division*—supply policy, movement, transport, disposals and cataloguing;
- *Technical Services and Logistic Development Division*—resource management, technical services, quality assurance, standardisation and international logistic policy;
- *Facilities Division*—the infrastructure of military bases and establishments, including consideration of environmental, social and economic factors;

- *Logistics Computing Centre*—operates in direct support of the Department and Defence Force logistic activities by providing automated information systems;
- *Information Systems Policy Division*—management of the Department's corporate information architecture and information systems planning;
- *Defence Contracting Branch*—arranges contracts for equipment, supplies and services above the public tenders threshold for the Defence Force and the Department.

Defence logistic activities perform a vital and complex role in maintaining the readiness and sustainability of the Defence Force and include:

- management of all items of supply including the determination of requirements and procurement (other than capital items), cataloguing, warehousing, accounting, distribution and disposal, and the management of the systems (including computer systems) upon which the Defence Force is dependent;
- replacement, repair and maintenance of equipment in service;
- provision of quality assurance for new equipment and for repair and overhaul;
- provision of transport services;
- contribution of supply and engineering expertise to the determination and selection of capital equipment requirements;
- development of policy and guidelines promoting an integrated logistic approach to Defence Force supply and technical services matters;
- development of facilities infrastructure to support the operation of the Defence Force;
- development, implementation operation and maintenance of effective and efficient computing support;
- development of tri-Service policies to achieve efficiency improvements;
- provision of a high quality and timely contracting service in accordance with Commonwealth and Departmental policies;
- management of policy and standards for the decentralised information systems.

To support the Defence Force, logistic development takes into consideration Australia's unique geographical and population distribution characteristics which also influence strategic outlook and industrial development. Australian industry is actively encouraged to become involved in the development of major defence equipment and to establish support capabilities within Australian industry.

Despite this, there is a continuing need to seek overseas sources of supply for major items of defence equipment. International agreements for the support of equipment are arranged by the DLO and include the following assurances:

- Under the auspices of the ANZUS Treaty, a bilateral arrangement for reciprocal logistic support is formalised in the Memorandum of Understanding (MOU) on Logistic Support between Australia and the United States. The MOU, originally signed in 1980, was renewed in 1985 for a further 5-year period and now incorporates an annex on procedures to raise the level of priority for Australian logistic needs in the U.S. system.
- Government-to-government agreements with countries from which we are planning to procure equipment for support through the life of the equipment. Agreements have been obtained from Sweden, France, the Federal Republic of Germany and Norway. Similar assurances are being sought from several other nations.
- Formal government arrangements for reciprocal Quality Assurance have been signed with the United States, the United Kingdom, France, Belgium, the Netherlands, Sweden and the Federal Republic of Germany. Negotiations are continuing with Italy and Canada.
- Bilateral arrangements covering the support for material provided under the Defence Co-operation Program and other common inventory items have been completed with Papua New Guinea and Fiji and are being developed with Vanuatu and Tonga.
- Ongoing arrangements for the reciprocal provision of spare parts and repair services for the forces of New Zealand and Australia are a routine feature of logistics co-operation between the two countries. These are expressed in the MOU concerning Closer Defence Logistic Co-operation which was agreed in July 1983.

The additional costs associated with the more complex technology in weapons systems continues to put pressure on logistic resources, particularly when combined with the need to make a greater percentage of Defence expenditure available for new major equipment purchases. Attention is therefore turning to more rigorous justification of needs, increased rationalisation and improved efficiency without detriment to the effectiveness of the logistic support available to the Defence Force.

Movement and transport are vital ingredients to logistic support, providing scope for rationalisation amongst the Services of the Defence Force and amongst government departments. The commercial transport industry is included in current transport operating and contingency planning.

A review of Defence Movement Functions was completed and the recommendations are being examined. Some of the matters now being addressed separately include the development of integrated EDP systems, enhancement of the removals system, centralisation of some non-specific movement training and revision of publications.

In recognition of the importance of management systems to support logistic arrangements as well as operational systems, a major redevelopment of computer-based supply systems supporting Navy, Army and Air Force commenced in 1984. The aim of redevelopment is to provide systems which will support management and operational needs beyond the year 2000.

As far as possible, common systems will be developed and introduced concurrently with a computer replacement program. Redevelopment in conjunction with computer replacement is expected to provide systems able to provide the fast response, growth capacity, compatibility and interoperability necessary for a modern defence force. Implementation is planned to commence in 1990.

Progress on the project to date includes an On-line Inquiry System which provides the Services with significantly improved capability and other enhancements are planned. The Depot/Base element will be the first new system implemented because of the pressing need to replace ageing equipment.

Land

Defence is by far the largest Commonwealth user of land in Australia. The extent, visibility and significance of Defence activities generate a substantial level of public interest in the acquisition or use of land for defence purposes.

The management of programs to provide for Defence's land needs, therefore, must be conducted with rigour and sensitivity to ensure that the wider social value of land is balanced against its value to Australia's national security.

Facilities

During 1986–87, total expenditure on Defence facilities was $648 million. Major activities in support of the facilities function were centred on:

- Planning of facilities for the self-reliant defence of Australia especially for operations in the north and north-west. This included preliminary planning for development of a bare base airfield on Cape York Peninsula and the relocation of 2nd Cavalry Regiment to Darwin. Studies were also initiated on relocation of the Fleet from Sydney to HMAS Stirling, Western Australia and Jervis Bay, New South Wales, and consequential relocation and rationalisation of Navy's support infrastructure.
- Provision of facilities for planned new equipment and continued upgrading and modernisation of existing facilities. Major projects included: continued construction of facilities at RAAF Base Tindal, Northern Territory for No. 75 Squadron when re-equipped with F/A-18 aircraft ($209 million); completion of a bare base airfield for the RAAF at Derby, Western Australia ($62 million); completion of a home base for the F/A-18 Tactical Fighter Force at RAAF Base Williamtown ($83 million); and the construction of facilities at RAAF Base Townsville to support Army's first 14 new Black Hawk helicopters ($19.3 million)

Management of significant environmental issues including the development of an Environmental Impact Statement (EIS) for a proposal to extend the Port Wakefield Proof and Experimental Range, South Australia. The Government decided that a limited extension of the range would proceed. In November 1986, the Government also agreed that the proposed Army manoeuvre area near Cobar, New South Wales would not proceed. Environmental studies were commenced on the proposed relocation to Jervis Bay of the eastern half of the Fleet from Sydney Harbour and of a naval armament depot from Sydney. An environmental management plan for Tindal and land management plans for the Beecroft Peninsula naval gunnery range and the Army's Puckapunyal armoured training area were completed.

Defence manpower

PERSONNEL STRENGTHS OF THE PERMANENT DEFENCE FORCE AS AT 30 JUNE

	Navy	*Army*	*Air Force*	*Total*
1983	17,198	33,072	22,512	72,782
1984	16,692	32,278	22,672	71,642
1985	16,059	32,460	22,863	71,382
1986	15,538	31,834	22,677	70,049
1987	15,803	32,311	22,647	70,761
1988 (authorised average strengths)	15,657	31,746	22,612	70,015

The following table indicates the range of activities and occupations in which defence military and civilian manpower are involved.

FUNCTIONAL DISTRIBUTION OF DEFENCE MANPOWER AS AT 30 JUNE 1987 (*a*)

Function	*Service*	*Civilian*	*Total*
Under the Secretary, Department of Defence—			
Office of the Secretary	—	6	6
Manpower and Financial Services	297	1,933	2,230
Strategic Policy and Force Development (*b*)	264	200	464
Capital Procurement	73	321	394
Defence Logistics	134	677	811
Defence Science and Technology	49	4,304	4,353
Policy Co-ordination/Computing Services/Defence Contracting	73	509	582
Regional Offices	4	1,421	1,425
Office of Defence Production—			
Shipbuilding	3	4,409	4,412
Aerospace	—	1,954	1,954
Munitions	—	5,493	5,493
Guided Weapons and Electronic Support Facility	—	50	50
Administration	—	285	285
Under the Chief of the Defence Force—			
Office of the Chief of the Defence Force	13	—	13
Joint Service units	524	—	524
Navy	15,328	4,944	20,272
Army	31,658	6,210	37,868
Air Force	22,066	2,624	24,690
Headquarters ADF Units	124	208	332
Outrider Organisations of the Department of Defence	151	809	960
Total	**70,761**	**36,357**	**107,118**

(*a*) Figures cannot be reconciled with those in Year Books published prior to 1984 owing to changes within classifications. Civilian figures include only full-time operatives and exclude locally engaged civilians employed in support of Air Force deployment, overseas persons on extended leave and part-time staff. (*b*) Includes: (1) service and civilian overseas representation and, (2) 120 service and 6 civilian personnel attached to the Defence Co-operation Programs.

COMPOSITION OF PERMANENT DEFENCE FORCE(*a*) AS AT 30 JUNE 1987

	Navy	*Army*	*Air Force*	*Total*
Male				
Officers	2,120	4,056	3,325	9,501
Other Ranks	11,410	25,008	16,035	52,453
Cadets	390	517	413	1,320
Apprentices	425	435	388	1,248
Total	*14,345*	*30,016*	*20,161*	*64,522*
Females (*b*)				
Officers	147	365	306	818
Other Ranks (*c*)	1,311	1,930	2,180	5,421
Total	*1,458*	*2,295*	*2,486*	*6,239*
Total Strength	**15,803**	**32,311**	**22,647**	**70,761**

(*a*) Includes Reserve personnel on full-time duty. (*b*) Excludes female personnel on maternity leave. (*c*) Includes female officer cadets and female apprentices.

Reserve forces

Reserves comprise trained and partly trained volunteers who are available to participate in the defence of Australia and its interest in times of war or defence emergency. Royal Australian Navy and Royal Australian Air Force Reserves can be used to supplement and increase the rate of effort of the Permanent Forces. The Army Reserve consists mainly of formed units and sub units which, with the Regular Army, provide the basis for expansion of the Army.

RESERVE COMPONENTS WITH TRAINING OBLIGATIONS

30 June	*Navy*	*Army*	*Air Force*	*Total*
1982	1,094	31,706	873	33,673
1983	1,204	33,227	1,178	35,609
1984	1,220	29,021	1,608	31,849
1985	1,135	23,846	1,353	26,334
1986	1,118	23,145	1,318	25,581
1987	1,219	24,632	1,361	27,212

International defence relations

Australia's international defence policy seeks to support the security afforded by national defence arrangements in areas beyond the scope of our own decision-making. The primary objective is to work together with countries showing similar strategic concerns in order both to reinforce global stability and to promote the security of Australia's more immediate region.

Regional defence relations

Australia's regional defence policies are aimed at fostering the strategic stability and defence self-reliance of the region. To meet these objectives, Australia engages in a range of co-operative defence activities with the nations of South East Asia and the South Pacific. Such activities include:

- Ministerial and other high-level visits and defence consultations.
- Combined exercises.
- Port visits by HMA Ships.
- Other service to service contacts.
- Defence representation abroad. Defence Advisers or Attaches are stationed permanently at Australian diplomatic missions in Britain, China, Fiji, Indonesia, Japan, the Republic of Korea, Malaysia, New Zealand, Papua New Guinea, the Philippines, Singapore, Thailand and the United States of America, and are accredited to Brunei, Burma, Canada, and to the South Pacific nations of Kiribati, the Solomon Islands, Tonga, Tuvalu, and Western Samoa.

South East Asia

Defence relations with Malaysia and Singapore

Australia continues to support the security of Malaysia and Singapore under the Five Power Defence Arrangements by taking part in Five Power air, ground and naval exercises. Numerous bilateral co-operative activities also continue to be developed, including combined exercises, ship visits, training, advisory assistance, staff college and other personnel exchanges, defence science and technology co-operation, study visits and senior level visits.

The RAAF Mirage squadron at Butterworth will be replaced after mid-1988 by rotational deployments of F/A-18 aircraft to Butterworth and Singapore for a minimum of sixteen weeks per year. A detachment of P3C Orion aircraft at Butterworth undertakes surveillance patrols over the South China Sea and the north-east Indian Ocean. An Australian infantry company is maintained in a training role at Butterworth on the basis of three monthly attachments.

Defence relations with Indonesia, Thailand, the Philippines and Brunei

Co-operative defence activities with the other ASEAN countries have been developed in support of regional security and stability.

Australia sees a stable Indonesia as an important factor in its own security. In the long term, the government aims to promote a broad range of co-operative defence activities. The focus is currently on personnel exchanges, technical training in Australia, and projects involving the transfer of technology in aircraft maintenance and survey mapping.

Reflecting the importance the government attaches to the security of Thailand, a wide range of co-operative defence activities are conducted. These include high-level visits, ship visits, exercises, and training.

Defence contacts with the Philippines centre on senior level visits, RAN ship visits, and RAAF participation in the U.S./Philippines air defence exercise COPE THUNDER.

Bilateral defence relations with Brunei continue to expand and include senior level visits, training in Australia, and ground and naval exercises.

Papua New Guinea—PNG

The importance of Australia's defence relationship with its closest neighbour, Papua New Guinea, reflects shared strategic interests and continuing close associations between the two countries in many fields.

Defence co-operation activities with PNG emphasise the provision of specialist advice, specialist training, high level exchanges, military exercises and projects in which both Defence organisations co-operate to develop Papua New Guinea's defence capabilities. Funds to support defence activities with PNG in 1986–87 amounted to $22.88 million.

The South Pacific

Over the past year there have been some unwelcome developments in the South Pacific, including an increase in external involvement, particularly by Libya, and the military coups in Fiji. These have underlined the need for Australia to co-operate actively in the defence area with regional countries, as part of a broader Australian approach to safeguard our national interests. The government has announced its intention to give the South Pacific countries the same priority for defence co-operation as is given to the much older and more substantial defence relations with South East Asia.

The capacity of island nations to protect their maritime resources will be reinforced through the Pacific Patrol Boat Project. The Prime Minister handed over the first boat under the project, HMPNGS Tarangau, to the Papua New Guinea Minister for Defence on 16 May 1987. The Australian Minister for Defence handed over the second boat, RVS Tukoro, to Vanuatu on 13 June 1987. A further 12 boats are being built. Other participating countries are Western Samoa, Fiji, the Solomon Islands and the Cook Islands.

Australian defence co-operation activities in the South Pacific in general concentrate on the strengthening of defence infrastructures. These activities include equipment-based projects, training, the provision of specialist Australian Defence Force personnel, high-level exchanges and ship and aircraft visits. Funds to support defence activities with the South Pacific in 1986–87 amounted to $13.82 million.

Defence force activities overseas

The main areas where Australian Defence Force elements have been deployed during the year were Malaysia/Singapore, Papua New Guinea, the Middle East and the Indian Ocean. Units also visited the United Kingdom, Indonesia, the Philippines, the United States, Canada, New Zealand and the South-West Pacific.

Australian Defence Force elements in the Malaysia/Singapore area include:

Navy—Ships of the RAN on exercises and goodwill visits.

Army—An Australian infantry company is maintained at Butterworth on the basis of three month detachments from Australia, in a training role.

Air Force—The Government has decided that the Mirages will be replaced from mid-1988 by periodic deployments of F/A-18s as these aircraft are phased into service with the RAAF.

THE DEFENCE FORCE

Royal Australian Navy

The RAN maintains and exercises a modern, well-equipped and highly-trained maritime force. The structure of this force is based primarily on the provision at sea of a balanced force group, consisting of surface warships, naval aviation and submarines.

Higher organisation

The Chief of Naval Staff has command of the RAN, subject to the command of the Defence Force by the Chief of the Defence Force. Principal staff officers to the Chief of Naval Staff are the Deputy Chief of Naval Staff, the Chief of Naval Development, the Chief of Naval Personnel, the Chief of Naval Engineering, the Chief of Naval Materiel and the Director General of Supply (Navy). Other senior officers of the RAN include the Flag Officer Naval Support Command and the Flag Officer Commanding HM Australian Fleet.

Ships of the Royal Australian Navy

The Fleet

Guided missile destroyers: *Perth, Hobart, Brisbane*; guided missile frigates: *Adelaide, Canberra, Sydney, Darwin*; destroyer escorts: *Parramatta, Stuart, Torrens, Derwent, Swan*; submarines: *Oxley, Otway, Ovens, Onslow, Orion, Otama*; coastal minehunter: *Curlew*; inshore minehunters: *Rushcutter, Shoalwater*; amphibious heavy lift ship: *Tobruk*; patrol boats: *Fremantle, Wollongong, Dubbo, Whyalla, Geelong, Geraldton, Bunbury, Ipswich, Townsville, Bendigo, Gladstone, Warrnambool, Cessnock, Launceston, Gawler*; training ship: *Jervis Bay*; destroyer tender: *Stalwart*; oiler: *Success*; hydrographic survey: *Moresby, Flinders*; oceanographic research: *Cook*.

The heavy landing craft *Balikpapan, Wewak* and *Tarakan* have been paid off into Reserve but can be brought to operational readiness in 21 days. The heavy landing craft *Betano* and *Brunei* have been converted to interim hydrographic survey ships. The patrol boats *Advance, Aware, Adroit, Bayonet* and *Ardent*, and the heavy landing craft *Labuan* are crewed by Reserves.

Fleet Air Arm

The RAN currently operates four different types of helicopters (anti-submarine Sea King Mk50 and Mk50A, and Wessex, Kiowa and Squirrel) and HS748 electronic warfare training aircraft from HMAS *Albatross*, the Naval Air Station at Nowra in New South Wales.

The RAN operates Jindivik pilotless target aircraft from the Jervis Bay Range facility in New South Wales.

Equipment for the Royal Australian Navy

Significant new equipment received by the RAN in 1986–87 included:

- inshore minehunter—*Rushcutter*.

Deliveries expected during 1987–88 include:
- inshore minehunter—*Shoalwater*.

Contracts and tenders negotiated during 1986–87 include:
- contract for supply of 6 submarines
- funded study for the provision of new surface combatant ships.

Training and entry

RAN Staff College

The RAN Staff College located at HMAS *Penguin*, Balmoral, New South Wales, prepares RAN officers of Lieutenant Commander and Lieutenant rank for command and staff appointments. Two courses of 22 weeks duration are run annually, each course comprising 28 students, typically 20 naval officers, one officer each from the Army, RAAF, USN and RNZN, two Public Service Board officers, and two Defence Co-operation Program students.

Officer Entry

There are a number of different avenues of officer entry to the RAN, open to both males and females. Applicants for a permanent commission must be aged between 17 and 20 and meet Service selection criteria and the matriculation requirements of the University of New South Wales in their specialisation. Those selected study for a degree at the Australian Defence Force Academy, while undergoing appropriate Service military and professional studies. Officer appointees specialise in Seaman, Supply and Secretariat, Engineering or Instruction Branches. Applicants for a short service commission of nine years (inclusive of two years training) must be aged between 17 and 24 and have either matriculated to a degree course at an Australian university, college of advanced education or institute of technical and further education, or achieve four passes at Year 12 level. Training is conducted initially at the Royal Australian Naval College at Jervis Bay and subsequently in RAN ships and establishments. Entry is also available to professionally qualified personnel such as doctors, nurses, teachers, engineers and lawyers, who must be less than age 31 and appropriately qualified. Initial training of Direct Entry Officers is conducted at Jervis Bay.

Sailor Entry

There are several available entry schemes, all of which are open to both males and females, depending upon an individual's age, educational standard, final employment and interests. New entry training is carried out at the following establishments:

- HMAS *Nirimba* at Quaker's Hill, New South Wales, is the primary establishment for all RAN trade training which includes courses for apprentices aged between 15 and 18 and direct entry tradesmen. HMAS *Nirimba* is also responsible for the training of general duties sailors.
- HMAS *Cerberus* at Westernport, Victoria, is the primary training establishment for all general entry, non-apprentice recruits aged between 16 or 17 and 28, depending on category specialisation. Recruits receive common basic training before progressing to category training courses.
- Advanced category training is additionally undertaken at various schools at HMAS *Penguin* and HMAS *Watson* in Sydney and the Naval Air Station at Nowra, New South Wales. A number of specialist courses are conducted in the United States and United Kingdom.

Ship construction and repairs

There are two naval dockyards, one at Garden Island, Sydney, and one at Williamstown, near Melbourne, which has been offered for sale. A third yard at Cockatoo Island in Sydney Harbour is operated by Vickers Cockatoo Dockyard Pty Ltd (VCD) under agreement with the Australian Government. This company carries out considerable naval refitting work, particularly of submarines.

Australian Army

The Australian Army maintains a potential ability and readiness to conduct operations on land for the defence of Australia and, in co-operation with the other arms of the Australian Defence Force, shares a responsibility to deter aggression, to ensure the nation's security and to preserve national interests.

Higher organisation

Command of the Army is the responsibility of the Chief of the General Staff, subject to the overall command of the Defence Force by the Chief of the Defence Force. He has for his principal staff officers the Deputy Chief of the General Staff, the Chief of Operations, the Chief of Personnel, the Chief of Logistics, the Chief of Materiel and the Chief of the Army Reserve.

The Army is organised into three commands as follows:

- *Land Command* which commands all field army units of the Australian Army, both Regular and Army Reserve.
- *Logistic Command* which commands the principal logistic elements of the Army.
- *Training Command* which is responsible for all individual training and commands all Army training establishments and schools with the exception of the Royal Military College, Duntroon (which is under the command of the Chief of the General Staff).

Military Districts as listed below provide administrative support for the three commands and, in certain cases, act as intermediate headquarters for them:

- *1st Military District*—the State of Queensland.
- *2nd Military District*—the State of New South Wales, less those parts included in 3rd and 4th Military Districts.
- *3rd Military District*—the State of Victoria and part of southern New South Wales.
- *4th Military District*—the State of South Australia plus a portion of south-western New South Wales.
- *5th Military District*—the State of Western Australia, less the Kimberley Local Government Area.
- *6th Military District*—the State of Tasmania.
- *7th Military District*—the Northern Territory plus the Kimberley Local Government Area of Western Australia.

The military district headquarters also handle those matters in which both Commonwealth and State Governments are involved.

Training

Officer Training

The Army conducts pre-commissioning training of its officers at:

- *Royal Military College*. Located at Duntroon in the Australian Capital Territory, this college provides military pre-commissioning training for all officers of the Regular Army except Specialist Service Officers, but including those attending the Australian Defence Force Academy.
- *Officer Cadet Training Units*. These units are located in each Military District and provide pre-commissioning training for the majority of officers for the Army Reserve.
- *University Regiments*. These units identify and train tertiary students as officers for service in the Army Reserve.
- *Specialist Service Officer Course*. This course is conducted at Land Warfare Centre, Canungra, Queensland, and provides an introduction to the Army for newly commissioned Specialist Service Officers in professions such as Law, Medicine and Dentistry.

Command and Staff College

Located at Queenscliff in Victoria, the college provides training for selected Australian and overseas officers, to prepare them for command and staff appointments in the rank of Lieutenant Colonel.

Other rank training

Initial training for other ranks is provided as follows:

- *1st Recruiting Training Battalion, Kapooka, New South Wales*. This unit is the major training unit for all general enlistees into the Regular Army.
- *Army Apprentice School, Bonegilla, Victoria*. This school provides initial trade and military training for apprentice enlistees.
- *Army Reserve*. Recruits attend initial training at courses conducted by Training Groups located in most Military Districts.

Land Warfare Centre

The Land Warfare Centre at Canungra in Queensland conducts courses for both officers and other ranks as follows:

- promotion subjects;
- tactics and administration;
- individual battle skills;
- sub-unit operations.

Other Schools

Army schools have been established to train officers and other ranks in up to date techniques of their own arm of service. Courses conducted include training, promotion and instructor development for members of both the Regular Army and the Army Reserve.

Equipment for the Army

Significant equipment introduced into service by the Army in 1986–87 included: 676 general purpose machine guns; 6 mortar locating radars; 22 medium power radio terminals; 299 four tonne trucks; 9 water purification plants; 9 satellite and 1 ground based survey positioning systems; 585 personnel parachutes; and a wide range of commercial vehicles. In addition, 19 anti aircraft missile systems, which have been delivered, will come into service in the next 12 months. Deliveries expected in 1987–88 include 373 light field vehicles, 32 Line of Communications bridging sets, 43 rough terrain cranes, 259 four tonne trucks, an anti-tank mine system, a ram air parachute system, 14 thermal imagers, 13 ground surveillance radars, new camouflage combat clothing, an electronic warfare support measures sub-system and 5 high power radio terminals.

Royal Australian Air Force

The function of the Royal Australian Air Force is the conduct of operations in the air for the defence of Australia and Australian interests.

Higher organisation

The Chief of the Air Staff (CAS) is responsible to the Minister for Defence through the Chief of Defence Force (CDF) for command of the RAAF. Staff to assist the CAS in discharging his responsibilities and to provide higher command, policy and broad planning direction of RAAF activities is provided by Department of Defence (Air Force Office) (DEFAIR). The CAS is directly assisted in his decisions by the Chief of the Air Staff Advisory Committee (CASAC). The CASAC includes the Deputy Chief of the Air Staff, Chief of Air Force Operations and Plans, Chief of Air Force Materiel, Chief of Air Force Personnel, Chief of Air Force Technical Services, the Air Officers Commanding Operational and Support Commands, and the Director General Supply—Air Force. However, as this Committee has no executive authority, the CAS is not bound to accept its advice in reaching decisions.

RAAF Commands

The RAAF is organised into two functional commands, Operational Command and Support Command. The Command headquarters provides the intermediate level command and staff structure through which the directives and policies of the CAS are placed in effect. (Other RAAF elements not assigned to these Commands are responsible direct to DEFAIR.) The general function of Operational Command is the provision of combat-ready forces for employment in assigned roles and the conduct of air operations within Australia and overseas from within the resources allocated. Support Command is responsible for the provision of support, including basic training of personnel, logistics and the supply and maintenance of RAAF equipment.

Units of either Command, but primarily Operational Command, may be assigned by the CAS to make up part of other formally established forces, such as a joint force, a tactical air support force (TASF), a peacekeeping force or any other grouping necessary to meet a particular operational task or contingency.

The operational component is made up of the strike/reconnaissance, tactical fighter, maritime and air transport forces and is supported operationally by the ground defence force and an operational support unit. The support component comprises a training element, an administrative element, a logistics element and units with other miscellaneous support responsibilities.

Aircraft

The RAAF's strike/reconnaissance force is equiped with F-111A/C and RF-111C aircraft. The tactical fighter force began re-equipping with F/A-18 aircraft in April 1985. RAAF maritime squadrons presently operate Orion P-3C aircraft. Transport aircraft currently in use by the RAAF are Hercules C-130E and C-130H, CC08 Caribou, Mystere 20, HS-748, Boeing 707, and BAC-111 aircraft. In addition, the air transport force operates the UH-1H Iroquois and AS-350 Squirrel helicopters and the CH-47C Chinook medium lift helicopter. Aircraft used by the support component for basic aircrew training are the CT-4A Airtrainer, Macchi MB-326H and HS-748.

Training

Australian Defence Force Academy—ADFA

Since 1986, ADFA has replaced the RAAF Academy, Engineer Cadet Squadron, and Supply Cadet Scheme as the primary source of tertiary-qualified entrants to the General Duties, Engineer and Supply Branches of the RAAF Officer Corps. ADFA is located in Canberra and contains the College of the University of New South Wales.

Basic aircrew training

Flying training for RAAF pilots is conducted at Point Cook, Victoria, and Pearce, Western Australia. RAAF navigators are trained at East Sale, Victoria, and airman aircrew (flight engineers, loadmasters and air electronics analysts) undergo basic training at Edinburgh, South Australia. The RAAF also provides pilot and observer training for the RAN and pilot training for the Army and Papua New Guinea Defence Force.

Aircrew operational conversion

Conversion training to Hornet fighter aircraft and Orion maritime aircraft is conducted by the respective conversion training squadrons. Conversions to other operational aircraft are conducted within the operational squadrons.

Officer training

With the exception of those officers commissioned from ADFA, all officers entering directly (with or without tertiary qualifications), commissioned airmen and airwomen, aircrew (pilot and navigator), engineering and equipment cadets and undergraduate students undergo the Junior Officer Initial Course (JOIC) at the Officers' Training School, Point Cook, Victoria. Following graduation from the JOIC, all graduates, with the exception of aircrew (pilot and navigator), immediately undergo the Joint Officer Executive Course at Officers' Training School, Point Cook.

Staff College

The RAAF Staff College located at Fairbairn, Australian Capital Territory, provides two residential staff courses. The Basic Staff Course of six weeks duration provides command and staff training to officers of the rank of Flight Lieutenant. The Advanced Staff College Course of forty-three weeks duration provides staff training and higher service education to selected officers normally of the rank of Squadron Leader. This course is designed to broaden the students' professional background and to prepare them for command and staff appointments of greater responsibility. A one year correspondence course covering military studies, international affairs and management is a compulsory prerequisite for entry to the advanced course.

Ground training

The major ground training schools are the School of Radio at Laverton, Victoria, and the School of Technical Training at Wagga, New South Wales. Both schools provide trade and technologist apprentice and adult trade training for technical personnel. They also provide post-graduate type training and specialist familiarisation courses on aircraft and telecommunications systems. Non-technical courses conducted at Wagga include catering, clerical, supervision and management and instructional technique.

Equipment for the Royal Australian Air Force

Significant new equipment received by the RAAF in 1986–87 included:

- 26 F/A-18 Hornet multi-mission aircraft (24 made in Australia);
- the first of two F/A-18 flight simulators;
- radar simulator at RAAF East Sale.

Deliveries expected in 1987–88 include:

- up to 18 F/A-18 Hornet aircraft;
- the second F/A-18 flight simulator;
- the first Pilatus PC9 trainer aircraft;
- the first of the Black Hawk helicopters.

Current contracts and tenders include:

- production of 67 Pilatus PC9 trainer aircraft;
- production of 39 S-70A-9 Black Hawk helicopters;
- supply and installation of airfield surveillance radars for RAAF Tindal and East Sale.

Defence Science and Technology Organisation

The Department's defence science and technology establishments, collectively known as the Defence Science and Technology Organisation (DSTO), form the second largest research organisation in Australia with some 1,000 professional scientists and engineers in its total staff of about 4,300.

DSTO was established as a unified organisation in 1975 when the laboratories formerly in the Department of Supply were brought into the Department of Defence and under the direct control of the Chief Defence Scientist.

DSTO has a central office, representatives in London and Washington, and five major and three small establishments in five States. The Chief Defence Scientist is supported in the central office by policy and management staff. Scientific advisers are attached to Service headquarters in Canberra and some field headquarters.

The objective of DSTO is to help the Australian Defence Force take best advantage of modern technology. Major activities are:

- scientific input to Defence policy including strategic and tactical analytical studies;
- solution of Defence Force problems particularly where high technology or special features of Australian physical or military environment are involved;
- modification and extension of life of military equipment;
- development of indigenous equipment;
- evaluation of military equipment and procedures by trials, exercise analysis or operational research;
- support to defence industry;
- international co-operation in defence research and development (R&D).

The DSTO also conducts mission-oriented research and enhances or maintains a technology base in key areas such as surveillance, aeronautics, weapons guidance and other electronic systems and countermeasures, underwater acoustics, materials research including into advanced composites, explosives and propulsion.

There is considerable interaction between DSTO and its principal customers, the Defence Force and defence industry. Many companies benefit from close association with this R & D effort, some having facilities adjoining or co-located with the DSTO's Salisbury site.

Despite the laboratories' strong alignment with defence, their unique skills and facilities are available for non-defence tasks when priorities permit. Functions of the laboratories are briefly described below.

The DSTO central office in Canberra has two Divisions. Science Programs and Resources Division formulates and develops defence science management policies and long-range science plans. It develops, manages and reviews the DSTO program of tasks including major development projects. It also develops plans for the use of DSTO personnel, their recruitment and professional development, and for DSTO personnel administration policies and procedures; plans, manages and reviews the acquisition and deployment of DSTO resources, including finance, facilities, equipment and stores; and forms, develops and reviews financial and administrative policies and procedures for the DSTO.

Science Policy Division is responsible for the DSTO Scientific Advisers attached to the Navy, Army and Air Force. It provides advice to DSTO on major Defence projects and co-ordinates DSTO involvement in senior Departmental committees; fosters DSTO contacts with other science and technology bodies, including State and Commonwealth science research bodies, tertiary education institutions and industrial research and development cells; and provides information services to the Australian Defence Force and the Department of Defence. It is also responsible for trials and evaluation of equipment for the Australian Defence Force, and Defence information services and libraries. Together with the Chief of the Defence Force, it is responsible for the Australian Ordnance Council.

Aeronautical Research Laboratory, Fishermens Bend, Victoria

The laboratory provides research in fields such as aerodynamics, aircraft materials, structural integrity and efficiency of aircraft, analysis and integration of systems, and on air-breathing propulsion systems and engine airframe integration and performance. It also assists civil aviation in some of these fields.

DSTO Electronics Research Laboratory, Salisbury, South Australia

The laboratory is concerned primarily with R&D in radio and communications, electronics, infra-red physics, electronic warfare, command and control, and information technology.

Materials Research Laboratory, Maribyrnong, Victoria

The laboratory provides research and development support in fields including organic and inorganic materials, metallurgy, explosives and ordnance, electromagnetic propulsion and terminal ballistics, high energy lasers and camouflage.

Armed Forces Food Science Establishment, Scottsdale, Tasmania

AFFSE determines the energy and nutrient requirements of servicemen under all conditions in which they may be expected to operate and translates these needs into ration scales for static mess feeding and ration packs for combat purposes. It also researches the storage and packaging of food. AFFSE is part of the Materials Research Laboratory (MRL).

Joint Tropical Trials and Research Establishment, Innisfail, Queensland

JTTRE performs investigations and research on the effects of tropical environments on materials, equipment and electromagnetic wave propagation; and on mechanisms of degradation, ways of measuring degradation and the classification of tropical environments. Sponsored jointly by Australia and United Kingdom, JTTRE is part of MRL.

DSTO Surveillance Research Laboratory, Salisbury, South Australia

The laboratory provides R&D in electromagnetic surveillance, concentrating on high frequency and microwave radars, optoelectronics and physics.

DSTO Weapons Systems Research Laboratory, Salisbury, South Australia

The laboratory is responsible for R&D related to aeroballistic aspects of weapons and weapon systems, rocket and gun propulsion systems, combat data and display systems, guidance and control systems for weapons, underwater detection systems and the integration of systems. Its laboratory at Pyrmont, New South Wales, conducts operations research studies on maritime warfare, analyses maritime exercises, and undertakes research on underwater acoustics, oceanography, sonar and mine warfare.

Defence Support Centre, Woomera, South Australia

The Centre provides services to support the township of Woomera and a residential base for the operation of joint U.S.-Australian facilities at Nurrungar.

Natural Disasters Organisation—NDO

NDO's primary peacetime function is to mitigate the effects of disasters. It does this, at the request of a State or Territory, by co-ordinating physical assistance from Commonwealth sources including the Defence Force. These actions are designed to complement the activities of a State/Territory's own counter disaster organisation. NDO and State/Territory counter disaster organisations constitute the nucleus of the civil defence structure.

NDO develops and implements national level contingency plans to provide for effective responses to requests by designated State/Territory counter disaster authorities for Commonwealth assistance during disasters or for civil defence needs. A National Emergency Operations Centre, located at NDO headquarters in Canberra, co-ordinates national efforts when required and maintains communications with State and Territory authorities and Commonwealth departments. NDO also manages a National Registration and Inquiry System (NRIS) for disaster victim registration and location.

On behalf of the Australian International Development Assistance Bureau, NDO acts in an advisory, planning and operational capacity for Australian overseas disaster preparedness and relief, in Papua New Guinea and the south west Pacific region.

NDO operates the Australian Counter Disaster College at Mount Macedon in Victoria for training selected personnel in disaster management and civil defence, as well as providing a forum to promote understanding and co-operation between elements of the counter disaster community. Training is conducted either at the College or by mobile teams from the College visiting a State or Territory.

NDO makes a direct contribution to the national counter disaster capability through the administration of a number of Commonwealth funded financial programs for the support of State/Territory Emergency Services. These programs include the supply of emergency equipment such as radios, rescue vehicles, flood boats, etc., reimbursement of salaries of State/Territory full-time organisers at regional level, subsidies on a dollar for dollar basis to an agreed limit towards accommodation costs of units at local government level, and the provision of public awareness and training material.

Office of Defence Production

Within overall defence policy, the Office of Defence Production (ODP) provides commercially oriented industrial support for the Australian Defence Force in both peace and war through the effective management of the government owned and operated factories and dockyards.

As at 30 June 1987, ODP comprised some 12,500 people in 9 operational Munitions Group establishments, the Government Aircraft Factories, two dockyards and a Central Office located in Victoria, New South Wales and the Australian Capital Territory. These establishments have a large and diverse spread of capabilities ranging from heavy engineering, through chemicals and explosives to clothing. Of the twelve establishments:

- seven are primarily engaged in producing ammunition, explosives, small arms and ordnance;
- the Australian Government Clothing Factory specialises in the design and production of a wide range of quality uniforms and accoutrements;
- the Guided Weapons and Electronic Support facility in New South Wales provides a range of technical support for the Defence Force and industry in electronics related fields;
- the Government Aircraft Factories (GAF) located at Fishermens Bend and Avalon in Victoria are primarily engaged in the design, production and overhaul of manned and unmanned aircraft and guided weapons. A government owned company, Aerospace Technologies of Australia Pty Ltd, took over the administration of GAF on 1 July 1987;
- Garden Island Dockyard undertakes the repair, refit, modernisation and conversion of surface naval ships; and
- Williamstown Dockyard is primarily concerned with the construction and modernisation of naval ships to destroyer size. It has been sold to a commercial organisation.

AUSTRALIANS AT WAR

(This special article has been contributed by the Australian War Memorial—written by Matthew Higgins)

Over 100,000 Australians have lost their lives through war. Many more thousands have been wounded, while the number of Australians who have served abroad in wartime is eight to nine times the number who have died.

These bare statistics alone show the significance that war has had for Australia. Australia's history is different from that of many other nations in that since the first coming of the Europeans and their dispossession of the Aboriginals, Australia has not experienced a subsequent invasion; no war has since been fought on Australian soil. Yet Australians have fought in ten wars. Some of these have been in distant lands, others much closer to home. All of them were begun by other nations and involved Australia because of its overseas ties; alliances formed through sentiment, loyalty or simply for reasons of security. Paramount among these ties have been those with Great Britain and, more recently, the United States.

At times war has brought Australian society together. Remarkable displays of patriotic fervour have been created in wartime, as witnessed at the outbreak of World War I. But war has also turned Australian society against itself. During the conscription referenda campaigns of World War I and the moratorium street marches of the Vietnam years (caused, in part, by the conscription issue) the nation experienced great social tension.

War began to have an impact on Australia and Australian society during the later 1800s. Australia's participation in several small imperial wars during the second half of the nineteenth century allowed the colonies to demonstrate their loyalty to Britain and helped to strengthen imperial ties. These overseas involvements also encouraged the colonies to believe that they could occupy a larger place on the international stage.

World War I, though, had a much greater impact on Australian society. Anzac Day, commemorating the landing of Australian and New Zealand troops on the Gallipoli Peninsula on 25 April 1915, is Australia's most important commemorative day. The Anzac legend, representing the Australian fighting man as a resourceful, resilient, even cheerful warrior, has become part of Australia's folklore. It has been an accepted part of the culture for two generations of Australians. More recently it has been questioned increasingly.

That same Anzac landing really heralded Australia's entry into the First World War, a war that took nearly 60,000 Australian lives. The tremendous cost of the War (Australia's casualty rate, in proportion to the number of troops engaged, was higher than for any other country in the British Empire) left an indelible scar on the nation. Perhaps the most tangible sign of this was the number of memorials, still standing today, built in cities and towns around the country after the end of hostilities. The Australian War Memorial was inspired by that War.

World War II, for the first time in white Australia's history, placed the country under the very threat of invasion. Australia's total resources were called upon to a degree not seen before. Women increasingly filled the places in primary and secondary industry left by men. By the end of the War in 1945, the place of women in society had changed dramatically. The War also fundamentally altered Australia's relationship with Britain, for it had forced Australia to look away from Britain and towards the United States for support and security.

The Asian wars that followed, in Korea, Malaya, Malaysia and Vietnam, have all helped to change further Australia's outlook on the world. Well before 1972, when the last Australians left Vietnam, Australia had begun to see itself not merely as a part of the European world but, realistically, as a neighbour of South-East Asia. Involvement in these conflicts has strengthened Australia's relationship with the United States.

Australia's military history began with the several companies of Marines of the Royal Navy which landed with the first fleet in 1788. From 1790 until 1870 the colonies' defence forces consisted mainly of a succession of British regiments which garrisoned remote fortifications, guarded convicts, fought Aboriginals and played a notable role in Australia's development. During the 1850s, the six colonies began raising their own forces. Towards the end of the century these grew rapidly.

Australian soliders took part in a number of overseas campaigns during the colonial period. Some 2,500 volunteers from New South Wales and Victoria went to New Zealand in 1863 to fight in the Waikato regiments against the Maoris. In 1885, 750 New South Wales troops went to the Sudan to assist British forces in quelling rebellion. Because the men of the Waikato regiments had joined a New Zealand force, the Sudan contingent (though it saw little action) is regarded as Australia's first official expeditionary force. Victoria, New South Wales and South Australia also sent naval contingents to China during the Boxer rebellion, 1900–01.

From European settlement in 1788 until after Federation in 1901, Australia's strategic naval defence was provided by ships of the Royal Navy. Colonial naval forces for local defence were also established. In 1860 the Victorian government dispatched the corvette, HMVS *Victoria*, to serve in New Zealand during the Anglo-Maori wars. The South Australian cruiser, *Protector*, served off China during the Boxer rebellion.

When the Australian colonies achieved Federation in January 1901 they had been involved in a war in South Africa for more than a year. In October 1899 the Boer War had broken out between the British and the mainly Dutch farmers (Boers) of the Transvaal and the Orange Free State. The Australian colonies and (after Federation) the Commonwealth sent contingents totalling 16,175 men to serve with the British army. The war was one of movement in which the Australians, fighting as mounted infantry, played a key role. By the time a peace treaty was signed in 1902, they had suffered over 1,900 casualties; of these 518 had died, most from disease.

World War I

By 1914, Europe had become increasingly unstable. When the heir to the throne of the Austro-Hungarian empire was assassinated in June, an intricate system of alliances led the major European States into war. On 4 August Britain and Germany went to war. As a member of the British empire, Australia was automatically committed. Australians entered the War with enthusiasm, out of a sense of adventure or a sense of loyalty to Britain, or both. Australian leaders promised support right up to 'the last man and the last shilling', and Britain was offered a force of 20,000 men—the Australian Imperial Force (AIF).

The first Australian force to take part in the War was the Australian Naval and Military Expeditionary Force. By December 1914, the AN&MEF had seized German wireless stations in New Guinea and nearby islands, though not without suffering five men killed and four wounded—the first Australian battle casualties of the War.

The 1st Division of the AIF sailed from Australia in November 1914. During the voyage, HMAS *Sydney* destroyed the German raider, SMS *Emden*, off the Cocos Islands. During five months' training in Egypt, the men of the 1st Division, together with New Zealand troops, came to be known as the Anzacs (the Australian and New Zealand Army Corps).

On 25 April 1915 the Anzacs landed on the Gallipoli Peninsula and began an eight-month campaign against Turkish forces. Despite their determination, the Australians and New Zealanders failed to achieve their objectives. The campaign developed into a stalemate in which neither the Anzacs nor the British and French troops on other parts of the Peninsula made substantial advances. Conditions were appalling and disease took a greater toll than fighting. Finally, on 20 December 1915, the last Australians were evacuated. During the campaign Australia suffered 8,700 dead, 19,000 wounded and 700 missing.

After Gallipoli, the main body of the AIF went to France to fight on the Western Front against the Germans. Between July and September 1916 the Australians fought in the first battle of the Somme and experienced some of the bloodiest fighting of the war, sustaining immense casualties. The battle for the village of Pozières was the major Australian action during the Somme fighting and extraordinarily intense German shellfire turned it into a living hell. After the War, official historian C. E. W. Bean wrote that Pozières ridge was 'a ridge more densely sown with Australian sacrifice than any other place on earth'.

Following the fighting for Bullecourt in April-May 1917, the Australian infantry attacked strong German defences around Ypres in Belgium, fighting in terrible mud amid heavy artillery and gas barrages. Messines Ridge, Menin Road and Broodseinde were taken but it proved impossible to advance beyond Passchendaele before winter. Australian casualties in this fighting totalled 38,000.

Meanwhile, the Australian Light Horse had been fighting the Turks in the deserts of Sinai and Palestine. Lighthorsemen helped defend the Suez Canal against Turkish forces in 1916 before advancing across the Sinai desert. During 1917 they fought with British forces to drive the Turks out of their defences between Gaza and Beersheba. This advance included a dramatic charge at Beersheba on 31 October. By December, Jerusalem had been captured.

On the Western Front, spring 1918 saw a German offensive break through allied lines on the Somme. An Australian counter-attack at Villers-Bretonneux began a series of reverses for the Germans and by July much ground had been regained. On 8 August, the long-awaited allied offensive began and the Australians played a major role in the drive to the Hindenburg line. Germany agreed to an armistice and, after four years of terrible fighting and horrific casualties, the War ended on 11 November 1918. In Palestine, the Turks had signed an armistice nearly two weeks before, following the capture of Damascus by allied forces.

The Australian Flying Corps provided four squadrons in the air war; one served in the Middle East and three others on the Western Front. Australians also flew with the British Royal Flying Corps. Australian naval forces served in a number of theatres during the War. They patrolled the North Sea, the South China Sea, the Bay of Bengal, the Netherlands East Indies and the Mediterranean.

Though a considerable distance from the fighting, Australians at home felt the impact of the War. New demands were made on the Australian economy. New industries had had to be developed. The cost of defence meant heavy borrowing and new taxes. Strikes broke out in 1915 and recurred throughout the War.

The enormous casualties incurred by the AIF on the Somme in 1916 raised the issue of conscription being used to maintain levels of reinforcements. It soon opened up the divisions in society that the war had been creating since 1914, but which had remained beneath the surface. Forced to put the issue to a referendum, the Prime Minister, W. M. Hughes, led the campaign for a 'yes' vote. The referendum was lost narrowly and Hughes, because of his role in the 'yes' campaign, was expelled from the Labor Party which was against conscription. Hughes took a number of followers with him, and with his previous political opponents formed the National Party. The new party was elected with a landslide majority in May 1917. A second referendum in December 1917 rejected conscription by a larger majority. The campaign was shorter than the first, although the bitterness on both sides had increased. The degree of tension created by these referenda had rarely been seen before in Australian history.

Australia had lost nearly 60,000 servicemen during the War. One in five of those who went overseas failed to return.

World War II

Despite its formation following World War I, the League of Nations did not avert future conflicts. The rise of Nazism in Germany (which partly resulted from the peace treaty signed in 1919) and Fascism in Italy led to a series of international crises in the 1930s. Germany invaded Poland on 1 September 1939, and Britain and France declared war on Germany two days later. Australia was again at war.

Australian troops embarked for the Middle East early in 1940. In December they joined in the Allied campaign against the Italians in Cyrenaica which culminated in the capture of Benghazi in February 1941. The German *Afrika Korps* then landed at Tripoli and pushed back the Allies. Australian, British Commonwealth and Polish troops were besieged in Tobruk by the Germans and Italians until relieved in December. The campaign rolled across North Africa several times. In October 1942 the Australians played a significant part in the battle of El Alamein, in which the Germans and Italians were decisively defeated and forced to retreat from the North African theatre.

After playing a prominent part in the North Africa in early 1941, the 6th Australian Division was sent with New Zealand and British troops to halt a threatened German invasion of Greece. Overwhelmed by the Germans, the force fought a rearguard action before being withdrawn to Crete and Egypt. Crete was evacuated following a German airborne assault in May 1941.

Australians joined British and Indian troops in June to attack the Vichy French in Syria. The invasion thrust north from Palestine with naval support along the coast and, after a five-week campaign, the Vichy forces concluded an armistice.

Japan entered the War on 7 December 1941. Despite their determined efforts, Australians and Allied forces in Malaya and Singapore, and smaller garrisons on Java, Timor, Ambon and New Britain were overwhelmed during the next few months. The survivors began a three-and-a-half year ordeal in captivity. Australia itself was attacked four days after the surrender of Singapore, when Japanese aircraft bombed Darwin on 19 February 1942. Broome and other north-west coastal towns were also attacked in subsequent raids. Japanese midget submarines raided Sydney Harbour during the night of 31 May.

Combined Australian and American efforts, however, prevented large-scale attacks on the Australian mainland. Japan suffered significant defeats in the battle of the Coral Sea in May 1942 and in the battle of Midway a month later. In August at Milne Bay in Papua, the Australians dealt the Japanese their first defeat on land. The bitter Kokoda campaign, fought by Australians in the humid, malarial jungle and rugged mountains of New Guinea, halted the Japanese advance on Port Moresby. By early 1943 Australian and American forces had pushed the Japanese out of Papua. Allied forces progressively retook New Guinea and adjacent islands during 1943 and 1944. By 1945, Australian troops had almost cleared New Guinea of the Japanese and had landed in Borneo. American forces were poised to invade Japan by mid-1945. On 6 and 9 August, atomic bombs were dropped on Hiroshima and Nagasaki, killing nearly 100,000 people. Japan surrendered shortly after.

The Royal Australian Navy played an important and diverse role during the War. From 1939 to 1941 Australian ships served with the Royal Navy in the Mediterranean Sea and the Indian Ocean. In July 1940, HMAS *Sydney* sank the Italian cruiser, *Bartolomeo Colleoni*, off Crete but was itself sunk by the German raider, *Kormoran*, off Western Australia in November 1941.

Following Japan's entry into the War, Australian naval operations were confined mainly to the Pacific Ocean and the seas to the north of Australia. RAN vessels co-operated closely with United States' ships in a range of engagements in support of Allied advances in the south-west Pacific theatre.

Air fighting played a much more significant role during World War II than it had in World War I. During 1939 to 1945, the RAAF co-operated closely with its British counterpart, particularly in the Mediterranean, North African and Malayan theatres. Australian aircrew served with the Royal Air Force in the bomber offensive against Germany and in the invasions of Europe.

Closer to Australia, the RAAF repelled Japanese fighters over Darwin and Port Moresby in 1942 and fought over the Bismarck Sea in 1943. Coastal surveillance, mine-laying and anti-submarine patrols were undertaken by RAAF squadrons. Transport and fighter-bomber squadrons supported ground assaults against the Japanese in Papua, New Guinea and adjacent islands. The RAAF often co-operated with American air formations in the War against the Japanese.

The War created complex administrative, military, economic and industrial burdens for Australia. Of the total population of 7,000,000 Australians, nearly 500,000 were engaged in munitions, or building roads or airfields, and over 1,000,000 joined the armed services. Industry, commerce and the labour market were regulated, prices and rents were fixed and food, petrol and clothing were rationed.

Australian women played a major role during World War II. They served in the three services and formed a large component of the labour force, releasing men for active service from munitions, ship-building and aircraft works, factories, farms, commerce, transport and communications.

After Japan entered the War, Australia depended increasingly on the United States for military support. General Douglas MacArthur arrived in Melbourne in March 1942 to lead Australian-American efforts. During the following two years, thousands of American servicemen were quartered in Australia, primarily for training before operations in the south-west Pacific area. Their presence had a considerable impact on Australian society, while at the same time the alliance with the United States was affecting Australia's long-term foreign policy.

Australia lost 34,000 service personnel during World War II. Total battle casualties were 72,814. Over 31,000 Australian became prisoners-of-war. Of these more than 22,000 were captured by the Japanese; by August 1945 over one third of them had died in the appalling conditions of the prisoner-of-war camps.

Wars in Asia

Not long after the end of World War II, the Cold War between Communist and Western nations intensified. During the 1950s and 1960s, Australia's concern about the growth of communism—particularly in Asia—saw the nation's foreign policy and defence commitments become much more closely oriented to that part of the globe, while at the same time it sought a still stronger alliance with the United States.

Communist North Korea invaded South Korea on 25 June 1950. The United Nations (UN) called for assistance to repel the aggressors. Australian air, sea and ground forces were dispatched and fought alongside other UN forces, always ultimately under American command. Australian soldiers fought in a number of bitterly contested actions, including Kapyong and Maryang San, and mounted numerous patrols and raids during the static war which developed from late 1951 to July 1953 while armistice negotiations dragged on. Australian airmen made a major contribution to the UN effort, flying a wide range of missions throughout the conflict. The RAN was represented by nine vessels, including the aircraft carrier HMAS *Sydney*. On 27 July 1953 an armistice was finally signed. The Australian services suffered 339 dead and 1,216 wounded; 29 servicemen became prisoners-of-war. During the war Australia, the United States and New Zealand signed the ANZUS treaty.

Two years before Australian forces embarked for Korea, fighting had broken out in Malaya between communist insurgents and British authorities. In 1950 Australia provided bomber and transport squadrons and army advisers. Combat troops were sent in 1955 and several RAN ships also undertook operations against the insurgents. Thirty-six Australians died during the Malayan emergency, which ended in 1960.

Three years later Australians were involved in another nearby conflict, Indonesia's 'confrontation' of Malaysia. Indonesia, opposing the formation of this new nation (consisting of Malaya, Singapore—which later withdrew—Sarawak and Sabah), started sending guerilla forces into Malaysia in 1963. During 1964 to 1966 Australian troops helped to defeat the guerillas in Sarawak and Sabah, while the RAN and RAAF helped defend the Malayan mainland against direct infiltration. Seventeen Australians died during the confrontation.

By the time the confrontation finished, Australian combat troops had been fighting in Vietnam for over a year. Following the end of French colonial rule in 1954, Vietnam had been divided, with a communist government in the north and a non-communist government in the south. Fighting broke out between communist guerillas and the southern régime during the late 1950s. By 1962 the United States was supplying substantial military support for the southern government, and in July Australia sent the first of its military advisers.

In 1965 Australia committed a battalion of troops to the conflict, and in 1966 an Australian task force of two (later three) battalions with supporting arms was provided. Australian troops fought mainly in Phuoc Tuy province against the Viet Cong (the guerillas of the communist National Liberation Front) and also against North Vietnamese forces outside the province. The RAAF flew transport aircraft, bombers and helicopters in Vietnam. Guided missile destroyers and specialist teams were provided by the RAN. More than 50,000 Australians served in Vietnam, making it Australia's biggest military commitment since World War II.

As involvement in Vietnam continued, opposition at home mounted. Growing numbers of Australians believed Australia should not be fighting in Vietnam; many were angered by the use of conscripts in the war. Opposition culminated in the nationally co-ordinated moratorium street marches of 1970–71. A bitter divisiveness permeated Australian society, reminiscent of the referenda campaigns of 1916–17.

Australian forces had withdrawn from Vietnam by late 1972. A total of 496 Australians had died and 2,398 were wounded during the war. Repercussions of the war, and Australia's involvement in it, are still being felt as Vietnamese refugees settle into Australian society and as the controversy over the effects on veterans of defoliants used in the war continues.

Australians have fought in ten wars on many different battlefields around the world. These involvements have left their mark on Australian society, causing great human cost yet helping to shape an Australian identity and Australia's relations with the rest of the world.

AUSTRALIAN WAR CASUALTIES

	Duration	*Numbers enlisted or engaged*	*Deaths*	*Wounded*	*Prisoners-of-war*
New Zealand	1860–61 (official Australian involvement)	Crew of HMVS *Victoria* served 1860–61 (several thousand Australians enlisted in the New Zealand Waikato regiments 1863–69)	Accurate figures not available	Accurate figures not available	Accurate figures not available
Sudan	1885	770 men joined the New South Wales contingent to the Sudan	9 died from all causes	3	—
South Africa	1899–1902	16,000 Australians joined colonial and Commonwealth contingents to serve in South Africa	251 killed in action or died of wounds, 267 died of illness, total 518 dead	538	100
Boxer rebellion	1900–01	560 men, from New South Wales, South Australia and Victoria served in colonial naval contingents	6 died from all causes	Accurate figures not available	—
First World War	1914–18	417,000 men enlisted in the Australian Imperial Force (including Australian Flying Corps) 330,000 served overseas (no figures for the Royal Australian Navy)	60,000 deaths from all causes (AIF only)	155,000 (AIF only)	4,044 (397 died while captive)
Second World War	1939–45	691,000 men and 35,800 women enlisted in the Australian Military Forces (AIF and Militia), 45,000 men and 3,100 women enlisted in the Royal Australian Navy, 189,000 men and 27,000 women enlisted in the Royal Australian Air Force	35,000 deaths from all causes (all services)	66,553 (all services)	7,289 in the war against Germany (of whom 234 died while captive), 22,376 in the war against Japan (of whom 8,031 died while captive)
Korean war	1950–53	10,657 army personnel engaged, 4,507 navy personnel engaged (no figures for air force)	339 deaths from all causes (all services)	1,216 (all services)	29 (1 died while captive)
Malayan emergency	1950–60	7,000 army personnel engaged (no figures for other services)	36 deaths from all causes (all services)	20	—
Indonesian confrontation	1963–66	3,500 army personnel (no figures for other services)	15 deaths from all causes (all services)	9	—
Vietnam war	1962–72	42,700 army personnel engaged, 2,858 navy personnel engaged, 4,443 air force personnel engaged	496 deaths from all causes (all services)	2,398 (all services)	—

Note: Casualty figures differ between sources due to variations in recording methods, criteria for classification etc.; the figures for deaths, wounded and prisoners-of-war should therefore be regarded as approximate only.

THE AUSTRALIAN DEFENCE FORCE ACADEMY

(*This special article has been contributed by the Australian Defence Force Academy*)

Background

The Australian Defence Force Academy, located in Canberra, commenced its activities in January 1986 and is now the centre for tertiary education for the Armed Services. The single Service Colleges which previously performed this function are now responsible for providing a purely military education and professional training.

From their foundation, the Royal Military College (1911) and the Royal Australian Naval College (1913) provided general education for cadets as well as professional training, except during the two World Wars when the normal courses were curtailed. After World War II, each of the three Armed Services adopted, as policy, that the educational standards should be raised for officers in training.

The establishment of the Royal Australian Air Force College in 1947 was the first move to provide a tertiary level education for officer cadets. The College developed into the RAAF Academy and from 1963 Academy graduates were required to complete a Bachelor's degree in Science from the University of Melbourne, in addition to their flying training and military studies.

Two decades of improvements in courses and standards at the Royal Military College (RMC) led to an agreement, in 1967 between the Department of Defence and the University of New South Wales, under which they would co-operate to further develop RMC into a degree-level institution. To that end, the University established the Faculty of Military Studies at RMC to conduct courses leading to the award of the University's degrees in arts, science and engineering.

Also in 1967, the University of New South Wales entered into an association with the RAN College enabling it to present approved courses. Subsequently, first year courses for certain University programs in arts, science and engineering were introduced. Successful cadets were sponsored by the Navy to complete Bachelor's degrees on the University's campus.

Concurrent with the developments at the RAN College and RMC, there was an inquiry by the Department of Defence into the feasibility of setting up a college for the joint education of officer cadets of the three Armed Services. Investigations on a wider scale followed, with the result that in 1974 the Commonwealth Government announced its intention of establishing a single tertiary institution for the Defence Force. Construction began in 1981 and the first officer cadets joined the Academy in 1986.

Entry to the Academy as an officer cadet is by selection. Applications are invited from young men and women who are seeking careers as officers in the Armed Services, and who have the educational qualifications to gain entry to the University of New South Wales and meet certain physical and personal standards.

Undergraduate students are officer cadets of the Royal Australian Navy, Australian Regular Army and Royal Australian Air Force. In addition to their academic studies, officer cadets undertake programs of military training at the Academy and at Service training establishments.

Commencement

The first intake of 343 First Year Officer cadets joined 174 Second Year and 142 Third Year officer cadets who transferred from the Royal Australian Naval College, Royal Military College and Royal Australian Air Force Academy. Together these young men and women formed the inaugural officer cadet body, termed the Corps of Officer Cadets.

Overseas students

A number of overseas students attend the Defence Academy. Overseas officer cadets who require English as a Second Language complete this course at the University of New South Wales prior to commencing first Year at the academy. The majority of overseas students come from New Zealand with Thailand and Singapore also represented during 1986.

Changes to service colleges

The advent of the Defence Academy has brought about the closure of the three single-Service officer training schemes which have rendered outstanding service to the Defence Force over many years. Their passing underlines the importance of the Defence Academy which is now to assume many of the roles and responsibilities formerly fulfilled by them. The establishments which closed at the end of 1985 were the Officer Cadet School, Portsea; the Engineer Cadet Squadron, RAAF Frognall and the element of No. 7 Stores Depot, RAAF Toowoomba.

Role

The role of the Defence Academy is to provide a balanced and liberal university education for officer cadets of the three Services, within a military environment which provides some initial professional military training. The Academy will also cater for higher post graduate studies for both military and civilian personnel.

The Defence Academy will be the source of over 40 per cent of the officer establishment of the Australian Defence Force. The officer cadet population will build up and is expected to peak at around 1,100 in 1989.

Compared with the previous single-Service arrangements the Defence Academy offers economies of scale with a broader and more appropriate range of academic courses and research. It also provides an environment within which young officers will develop a much better understanding of joint Service issues and the inter-dependencies that each Service has on the others. The friendships and associations that will be forged at the Defence Academy will cross Service boundaries, and will pay rich dividends in terms of inter Service co-operation and management in future years.

Academic integrity

Following an agreement signed on 7 May 1981, the University of New South Wales has accepted responsibility for the academic integrity of the Academy. The courses offered by the University College have been developed in close association with the Services to ensure that their needs will be met.

The academic year is divided into two sessions which together provide 33 weeks of study. This is consistent with practices in other Australian universities. Breaks during the year provide scope for leave, academic field trips, military tours and excursions, and adventurous training.

The following degrees of the University of New South Wales may be awarded to officer cadets of the Defence Academy:

Bachelor of Arts	BA
Bachelor of Arts with Honours	BA (Hons)
Bachelor of Engineering	BE (Elec)
	BE (Mech)
	BE (Civil)
Bachelor of Science	BSc
Bachelor of Science with Honours	BSc (Hons)

Arts and Science degree rules are liberal and permit major and minor Arts and Science subjects to be mixed.

Most officer cadets undertaking Arts and Science courses will be awarded degrees after three years. Students of merit may be offered transfer to an honours program which requires an additional year of study. Engineering courses follow a prescribed four year program.

Midshipmen and Air Force officer cadets studying aeronautical engineering, naval architecture or marine science will complete the last two years of their studies at either the University of New South Wales (in Sydney), Sydney University or the Royal Melbourne Institute of Technology.

Higher degrees are also offered; Masters Degrees by course work and/or research and Doctorates of Philosophy for original research. Other post graduate courses designed to provide continuing education for Service officers at varying stages of their careers are available. To help maintain the Service ethos and to provide opportunities for suitably qualified personnel, a small number of Service officers are seconded to the University as Honorary Visiting Fellows in most academic departments.

Military training

As soon as they join the Defence Academy, new officer cadets undertake three weeks of Common Military Training in which they acquire the knowledge and skills necessary for their early Service life.

At the end of each year a period of concentrated military training is undertaken by officer cadets. This period culminates in the Graduation Parade for third year officer cadets who have completed their training.

During academic sessions, six periods of Common Military Training have been incorporated in the weekly academic program to ensure officer cadets' military development continues during the year.

Common Military Training is conducted throughout the three years of an officer cadet's attendance at the Defence Academy and includes the following subjects:

- Defence Studies. This subject covers the development of each of the three Services and warfare in general. It also studies the place that Australia occupies in world affairs and emphasizes domestic and international affairs.
- Military Communication Skills. This subject introduces officer cadets to the style and format of written communication used by all three Services and gives them practice in formal speaking. Its object is to make each officer cadet confident and effective both in writing and in speaking.
- Methods of Instruction. This subject concentrates on the preparation and conduct of military instruction. Officer cadets are also introduced to the design and programming of military training courses.
- Physical and Recreational Training. This subject deals with fitness, strength and agility. As sport plays an important part in Service life, officer cadets are required to obtain a coaching or refereeing qualification for at least one sport while at the Defence Academy. Competitions in a wide range of sports are conducted within the Defence Academy and teams are entered in most civilian competitions in Canberra.
- Drill and Ceremonial. This subject engenders a knowledge of the customs and traditions of military ceremonial as well as self discipline and teamwork.
- Weapon Training. Operation and maintenance of the basic small arms Service weapons and weapons safety are covered in a series of courses.

Single-Service training

While officer cadets of all three Services live and work together at the Defence Academy they also undertake training that is relevant to their parent Service. After an initial induction period at the Defence Academy, officer cadets are introduced to their chosen Service during a special familiarisation period and more time is set aside at the beginning of the second and third years for further single-Service training. This is conducted by the individual Services and its composition varies according to each Service's requirements.

The Corps of Officer Cadets

The organisation providing the military environment within which an officer cadet's qualities are developed is the Corps of Officer Cadets.

The Director of Military Education and Training (colonel or equivalent) is the Commanding Officer, Corps of Officer Cadets with this appointment rotated amongst the three Services. The Corps of Officer Cadets contains six squadrons, each commanded by a major (or equivalent) with the strength of up to 192 officer cadets. Each squadron is subdivided into four cadet divisions of 48 officer cadets, each commanded by an army captain (or equivalent). The smallest sub-unit in the Corps of Officer Cadets is a section of eight officer cadets, commanded by a senior officer cadet. Each squadron has a warrant officer class two (or equivalent) and a sergeant to assist the officer commanding. The staff of the Corps of Officer Cadets is organised to ensure that an appropriate mix of Navy, Army and Air Force personnel is always maintained.

Under the supervision and guidance of the military staff, the day-to-day running of the Corps of Officer Cadets is the responsibility of the third year officer cadets. They fill senior and junior officer cadet command appointments within the Corps of Officer Cadets at wing, squadron, division and section levels. The responsibilities include matters relating to the administration and discipline of the Corps, as well as the co-ordination and administration of all sporting and social activities in which the Corps is involved.

Officer cadets are allotted to one of the six squadrons on joining the Corps of Officer Cadets. Throughout their time at the Defence Academy, officer cadets are mixed by Service, seniority and academic discipline. Each of the sub-units is therefore a combination of Navy midshipmen and Army and Air Force officer cadets.

Sports

Participation in sporting activities at the Defence Academy is designed to promote competition, teamwork, leadership, strength, agility and endurance.

Defence Academy sports are not limited to team events. Individual excellence in such sports as athletics, swimming, sailing and shooting, among others, is encouraged. All officer cadets are required to play one major sport in both summer and winter.

Library

The Australian Defence Force Academy Library was founded on collections transferred from the Bridges Memorial Library at the Royal Military College. Materials were also drawn from the libraries at the RAN College and the RAAF Academy.

The collections and services of the Academy library support research and undergraduate and postgraduate study within the University College. Approximately 190,000 volumes are held and there are current subscriptions to some 2,000 periodicals.

Computer centre

The Academy Computer Centre provides computer processing and programing support services for teaching, research, and administration throughout the Academy. In addition it offers a program and data entry service.

Prospects

The Defence Academy has made an excellent start under challenging and often difficult circumstances and all objectives are being met. A spirit of co-operation and determination to succeed exists amongst the military and academic staff and the development of esprit de corps amongst officer cadets from the three Services has exceeded expectations.

The Academy represents one of the most significant long-term military developments that has taken place in Australia in recent decades. It is an imaginative and exciting advancement in the training and education of the officer corps of the Australian Defence Force.

CHAPTER FIVE

PHYSICAL GEOGRAPHY AND CLIMATE OF AUSTRALIA

This chapter is concerned with the physical geography of Australia and features influencing Australia's climate. Detailed climatic data for each capital city are included. A special article on Australian landforms is below, and an article on Australia's weather service is included at the end of the chapter (*see* page 248).

LANDFORMS AND THEIR HISTORY

(This special article has been contributed by Professor Cliff Ollier, University of New England)

Australia is the lowest, flattest, and, apart from Antarctica, the driest of the continents. Unlike Europe and North America, where much of the landscape dates back to 20,000 years ago when great ice sheets retreated, the age of landforms in Australia is generally measured in many millions of years. This fact gives Australia a very distinctive physical geography.

The continent can be divided into three parts—the Western Plateau, the Central Lowlands and the Eastern Highlands.

The Western Plateau consists of very old rocks (some over 3,000 million years old), and much of it has existed as a landmass for over 500 million years. Several parts have individual 'plateau' names (e.g. Kimberley, Hammersley, Arnhem Land, Yilgarn). In the Perth area, younger rocks along a coastal strip are separated from the rest by the Darling Fault escarpment. The Nullarbor Plain is virtually an uplifted sea floor, a limestone plain of Miocene age (about 25 million years).

The Central Lowlands stretch from the Gulf of Carpentaria through the Great Artesian Basin to the Murray-Darling Plains. The Great Artesian Basin is filled with sedimentary rocks which hold water that enters in the wetter Eastern Highlands.

Much of the centre of Australia is flat, but there are numerous ranges (e.g. Macdonnels, Musgrave) and some individual mountains of which Ayers Rock (Uluru) is the best known. Faulting and folding in this area took place long ago, the area was worn to a plain, the plain uplifted and then eroded to form the modern ranges on today's plain. In looking at Ayers Rock the remarkable thing is not how it got there, but that so much has been eroded from all around, leaving it there.

In the South Australian part of the Central Lowlands fault movements are more recent, and the area can be considered as a number of blocks that have been moved up and down to form a series of 'ranges' (Mt Lofty, Flinders Ranges) and 'hills' (such as the Adelaide Hills), with the downfaulted blocks occupied by sea (e.g. Spencer Gulf) or lowlands including the lower Murray Plains.

The Eastern Highlands rise gently from central Australia towards a series of high plateaus, and even the highest part around Mt Kosciusko (2,230 m) is part of a plateau. There are a few younger faults and folds, such as the Lake George Fault near Canberra, and the Lapstone Monocline near Sydney.

Some plateaus in the Eastern Highlands are dissected by erosion into rugged hills, and the eastern edges of plateaus tend to form high escarpments. Many of these are united to form a Great Escarpment that runs from northern Queensland to the Victorian border. Australia's highest waterfalls (Wollombi on the Macleay, Wallaman Falls on a tributary of the Herbert, Barron Falls near Cairns, and Wentworth Falls in the Blue Mountains) all occur where rivers flow over the Great Escarpment. For most of its length the Great Divide (separating rivers flowing to Central Australia from rivers flowing to the Pacific) runs across remarkably flat country dotted with lakes and airstrips, and there is no 'Great Dividing

Range'. In eastern Victoria, however, the old plateau has been eroded into separate High Plains (such as Dargo High Plain), mostly lying south of the Divide which here runs across rugged country.

The present topography results from a long landscape history which can conveniently be started in the Permian, about 290 million years ago, when much of Australia was glaciated by a huge ice cap. After the ice melted, parts of the continent subsided and were covered with sediment to form sedimentary basins such as the Great Artesian Basin. By early Cretaceous times, about 140 million years ago, Australia was already so flat and low that a major rise in sea level divided it into three landmasses as the shallow Cretaceous sea spread over the land.

In the following Tertiary times Australia can be regarded as a landscape of broad swells varied by a number of sedimentary basins (Murray, Gippsland, Eucla, Carpentaria, Lake Eyre and other basins). These slowly filled up and some are now sources of coal or oil. The Eastern Highlands were uplifted about this time.

Throughout the Tertiary, volcanoes erupted in eastern Australia. Some individual volcanoes were the size of modern Vesuvius, and huge lava plains covered large areas. Volcanic activity continued up to a few thousand years ago in Victoria and Queensland. Australia's youngest volcano is Mt Gambier in South Australia, about 6,000 years old.

Between about 55 and 10 million years ago Australia drifted across the surface of the earth as a plate, moving north from a position once adjacent to Antarctica. There have been many changes in the climate of Australia in the past, but oddly these are not due to changing latitude. Even when Australia was close to the South Pole the climate was warm and wet, and this climate persisted for a long time despite changes in latitude. It was probably under this climate that the deep weathered, iron-rich profiles that characterise much of Australia were formed. Aridity only seems to have set in after Australia reached its present latitude, and the northern part was probably never arid.

Today a large part of Australia is arid or semi-arid. Sand dunes are mostly longitudinal, following the dominant wind directions of a high pressure cell. The dunes are mostly fixed now. Stony deserts or gibber plains (covered with small stones or 'gibbers') are areas without a sand cove and occupy a larger area than the dunefields. Salt lakes occur in many low positions, in places following lines of ancient drainage. They are often associated with lunettes, dunes formed on the downwind side of lakes. Many important finds of Aboriginal pre-history have been made in lunettes. Despite the prevalence of arid conditions today, real aridity seems to be geologically young, with no dunes or salt lakes older than a million years.

The past few million years were notable for the Quarternary ice age. There were many glacial and interglacial periods (over 20) during this time, the last glacial about 20,000 years ago. In Tasmania there is evidence of three different glaciations—the last glaciation, one sometime in the Quaternary, and one in the Tertiary. In mainland Australia there is evidence of only the last glaciation, and the ice then covered only 25 square kilometres, in the vicinity of Mt Kosciusko.

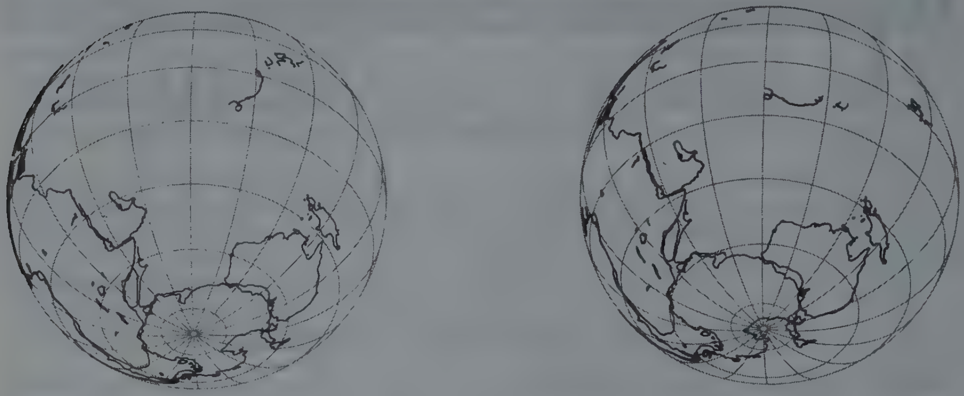
The broad shape of Australia is caused by earth movements, but most of the detail is carved by river erosion. Many of Australia's rivers drain inland, and while they may be eroding their valleys near their highland sources, their lower courses are filling up with alluvium, and the rivers often end in salt lakes which are dry for most of the time. Other rivers reach the sea, and have dissected a broad near-coast region into plateaus, hills and valleys. Many of the features of the drainage pattern of Australia have a very long history, and some individual valleys have maintained their position for hundreds of millions of years. The salt lakes of the Yilgarn Plateau in Western Australia are the remnants of a drainage pattern that was active before continental drift separated Australia from Antarctica.

During the last ice age, sea level was over 100 metres lower than it is today, and rivers cut down to this low level. When sea level rose again the lower valleys were drowned. Some make fine harbours (e.g. Sydney Harbour), whilst others have tended to fill with alluvium, making the typical lowland valleys around the Australian coast.

Coastal geomorphology is also largely the result of the accumulation of sediment on drowned coasts. In some areas, such as Ninety Mile Beach (Victoria) or the Coorong (South Australia), there are simple accumulation beaches. In much of the east there is a characteristic alternation of rocky headland and long beach, backed by plains filled with river and marine sediments.

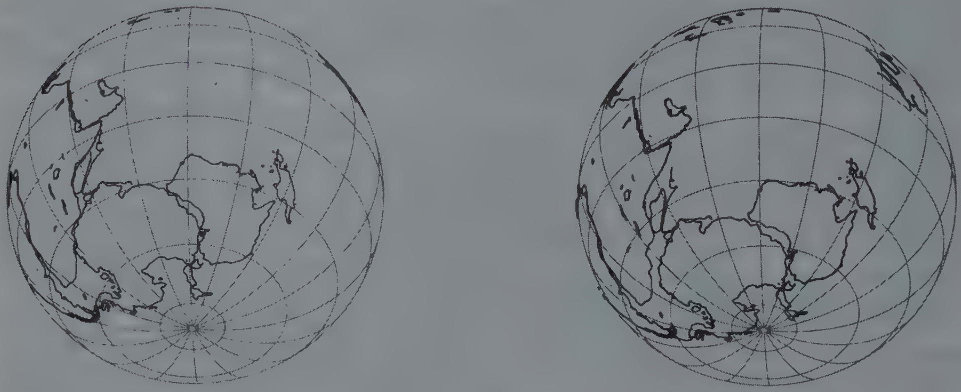
PALAEOGEOGRAPHIC RECONSTRUCTION MAPS: 300 MILLION YEARS AGO TO PRESENT DAY

(*Source:* Bureau of Mineral Resources, Geology and Geophysics)



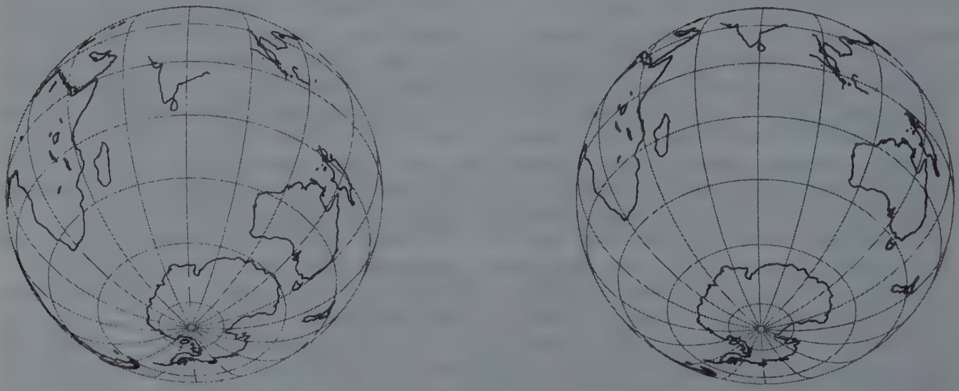
300 million years ago

250 million years ago



200 million years ago

150 million years ago



50 million years ago

Present day

These maps have been produced on an orthographic projection with a 20 degree graticule spacing. All six maps have a centre of view at a location of 83 degrees East longitude and 45 degrees South latitude.

The offshore shape of Australia, revealed in isobath contours, results mainly from the pattern of break-up of the super-continent of which Australia was once a part. There is a broad continental shelf around most of Australia, bounded by a steeper continental slope, except in New South Wales where the continental shelf is very narrow. The Queensland coast is bounded by a broad plateau on which the Great Barrier Reef has grown in only the last two million years. In South Australia the continental shelf is grooved by submarine canyons.

The Australian landforms of today are thus seen to result from long-continued processes in a unique setting, giving rise to typical Australian landscapes, which in turn provide the physical basis for the distribution and nature of biological and human activity in Australia.

Geography of Australia

Position and area

Position

Australia comprises a land area of 7,682,300 square kilometres. The land lies between latitudes 10°41′S. (Cape York) and 43°39′S. (South Cape, Tasmania) and between longitudes 113°09′E. (Steep Point) and 153°39′E. (Cape Byron). The most southerly point on the mainland is South Point (Wilson's Promontory) 39°08′S. The latitudinal distance between Cape York and South Point is about 3,180 kilometres, while the latitudinal distance between Cape York and South East Cape, Tasmania, is 3,680 kilometres. The longitudinal distance between Steep Point and Cape Byron is about 4,000 kilometres.

Area of Australia compared with other countries

The area of Australia is almost as great as that of the United States of America (excluding Alaska), about 50 per cent greater than Europe (excluding U.S.S.R.) and 32 times greater than the United Kingdom. The following table shows the area of Australia in relation to areas of other continents and selected countries.

AREAS OF CONTINENTS AND SELECTED COUNTRIES

('000 square kilometres)

Country	*Area*	*Country*	*Area*
Continental divisions—		Canada	9,976
Europe (*a*)	4,936	China	9,590
Asia (*a*)	27,532	Germany, Federal Republic of	248
U.S.S.R. (Europe and Asia)	22,402	India	3,288
Africa	30,319	Indonesia	1,919
North and Central America and West Indies	24,247	Japan	372
South America	17,834	Papua New Guinea	462
Oceania	8,504	New Zealand	269
Country—		United Kingdom	244
Australia	7,682	United States of America (*b*)	9,363
Brazil	8,512	**Total, land mass excluding Arctic and Antarctic continents**	**135,771**

(*a*) Excludes U.S.S.R., shown below. (*b*) Includes Hawaii and Alaska.

Rivers and lakes

The rivers of Australia may be divided into two major classes, those of the coastal margins with moderate rates of fall and those of the central plains with very slight fall. Of the rivers of the east coast, the longest in Queensland are the Burdekin and the Fitzroy, while the Hunter is the largest coastal river of New South Wales. The longest river system in Australia is the Murray-Darling which drains part of Queensland, the major part of New South Wales and a large part of Victoria, finally flowing into the arm of the sea known as Lake Alexandrina, on the eastern side of the South Australian coast. The length of the Murray is about 2,520 kilometres and the Darling and Upper Darling together are also just over 2,500 kilometres long. The rivers of the north-west coast of Australia, e.g. the Murchison, Gascoyne, Ashburton, Fortescue, De Grey, Fitzroy, Drysdale and Ord, are of considerable size. So also are those rivers in the Northern Territory, e.g. the Victoria and Daly, and those on the Queensland side of the Gulf of Carpentaria, such as the Gregory, Leichhardt, Cloncurry, Gilbert and Mitchell. The rivers of Tasmania have short and rapid courses, as might be expected from the configuration of the country.

There are many types of lakes in Australia, the largest being drainage sumps from the internal rivers. In dry seasons these lakes finally become beds of salt and dry mud. The largest are Lake Eyre 9,500 square kilometres, Lake Torrens 5,900 square kilometres and Lake Gairdner 4,300 square kilometres.

Other lake types are glacial, most common in Tasmania; volcanic crater lakes predominantly in Victoria and Queensland; fault angle lakes, of which Lake George near Canberra is a good example and coastal lakes formed by marine damming of valleys.

Area, coastline, tropical and temperate zones, and standard times

The areas of the States and Territories and the length of the coastline were determined in 1973, by the Division of National Mapping, Department of National Resources, by manually digitising these features from the 1:250,000 map series of Australia. This means that only features of measurable size at this scale were considered. About 60,000 points were digitised at an approximate spacing of 0.5 kilometres. These points were joined by chords as the basis for calculation of areas and coastline lengths by computer.

The approximate high water mark coastline was digitised and included all bays, ports and estuaries which are open to the sea. In these cases, the shoreline was assumed to be where the seaward boundary of the title of ownership would be. In mangroves, the shoreline was assumed to be on the landward side. Rivers were considered in a similar manner but the decisions were rather more subjective, the line being across the river where it appeared to take its true form.

AREA, COASTLINE, TROPICAL AND TEMPERATE ZONES, AND STANDARD TIMES: AUSTRALIA

	Estimated area			*Percentage of total area*		*Standard times*	
State or Territory	*Total*	*Percentage of total area*	*Length of coastline*	*Tropical zone*	*Temperate zone*	*Meridian selected*	*Ahead of G.M.T.(a)*
	km²		km				hours(*b*)
New South Wales	801,600	10.43	1,900	..	100	150°E	(*b*)10.0
Victoria	227,600	2.96	1,800	..	100	150°E	(*b*)10.0
Queensland	1,727,200	22.48	7,400	54	46	150°E	10.0
South Australia	984,000	12.81	3,700	..	100	142°30'E	(*b*)9.5
Western Australia	2,525,500	32.87	12,500	37	63	120°E	8.0
Tasmania	67,800	0.88	3,200	..	100	150°E	(*b*)10.0
Northern Territory	1,346,200	17.52	6,200	81	19	142°30'E	9.5
Australian Capital Territory	2,400	0.03	35	..	100	150°E	(*b*)10.0
Australia	**7,682,300**	**100.00**	**36,735**	**39**	**61**	..	..

(*a*) Greenwich Mean Time. (*b*) For States with 'daylight saving' an hour should be added for this period.

Climate of Australia

The climate of Australia is predominantly continental but the insular nature of the land mass is significant in producing some modification of the continental pattern.

The island continent of Australia is relatively dry, with 80 per cent of the area having a median rainfall of less than 600 millimetres per year and 50 per cent less than 300 millimetres. Extreme minimum temperatures are not as low as those recorded in other continents because of the absence of extensive mountain masses and because of the expanse of the surrounding oceans. However, extreme maxima are comparatively high, reaching 50°C over the inland, mainly due to the great east-west extent of the continent in the vicinity of the Tropic of Capricorn.

Climatic discomfort, particularly heat discomfort, is significant over most of Australia. During summer, prolonged high temperatures and humidity around the northern coasts and high temperatures over the inland cause physical discomfort. In winter, low temperatures and strong cold winds over the interior and southern areas can be severe for relatively short periods.

Climatic controls

The generally low relief of Australia causes little obstruction to the atmospheric systems which control the climate. A notable exception is the eastern uplands which modify the atmospheric flow.

In the winter half of the year (May–October) anticyclones, or high pressure systems, pass from west to east across the continent and often remain almost stationary over the interior for several days. These anticyclones may extend to 4,000 kilometres along their west-east axes. Northern Australia is then influenced by mild, dry south-east trade winds, and southern Australia experiences cool, moist westerly winds. The westerlies and the frontal systems associated with extensive depressions travelling over the Southern Ocean have a controlling influence on the climate of southern Australia during the winter season, causing rainy periods. Cold outbreaks, particularly in south-east Australia, occur when cold air of Southern Ocean origin is directed northwards by intense depressions having diameters up to 2,000 kilometres. Cold fronts associated with the southern depressions, or with secondary depressions over the Tasman Sea, may produce large day-to-day changes in temperature in southern areas, particularly in south-east coastal regions.

In the summer half of the year (November–April) the anticyclones travel from west to east on a more southerly track across the southern fringes of Australia directing easterly winds generally over the continent. Fine, warmer weather predominates in southern Australia with the passage of each anticyclone. Heat waves occur when there is an interruption to the eastward progression of the anticyclone (blocking) and winds back northerly and later north-westerly. Northern Australia comes under the influence of summer disturbances associated with the southward intrusion of warm moist monsoonal air from north of the inter-tropical convergence zone, resulting in a hot rainy season.

Tropical cyclones develop over the seas around northern Australia in summer between November and April. Their frequency of occurrence and the tracks they follow vary greatly from season to season. On average, about three cyclones per season directly affect the Queensland coast, and about three affect the north and north-west coasts. Tropical cyclones approaching the coast usually produce very heavy rain and high winds in coastal areas. Some cyclones move inland, losing intensity but still producing widespread heavy rainfall. Individual cyclonic systems may control the weather over northern Australia for periods extending up to three weeks.

Rainfall

Annual

The annual 10, 50 and 90 percentile* rainfall maps are shown on Figures 1, 2 and 3 respectively. The area of lowest rainfall is in the vicinity of Lake Eyre in South Australia, where the median (50 percentile) rainfall is only about 100 millimetres. Another very low rainfall area is in Western Australia in the Giles-Warburton Range region, which has a median annual rainfall of about 150 millimetres. A vast region, extending from the west coast near Shark Bay across the interior of Western Australia and South Australia to south-west Queensland and north-west New South Wales, has a median annual rainfall of less than 200 millimetres. This region is not normally exposed to moist air masses for extended periods and rainfall is irregular, averaging only one or two days per month. However, in favourable synoptic situations, which occur infrequently over extensive parts of the region, up to 400 millimetres of rain may fall within a few days and cause widespread flooding.

The region with the highest median annual rainfall is the east coast of Queensland between Cairns and Cardwell, where Tully has a median of 4,058 millimetres (61 years to 1985 inclusive). The mountainous region of western Tasmania also has a high annual rainfall, with Lake Margaret having a median of 3,559 millimetres (72 years to 1985 inclusive). In

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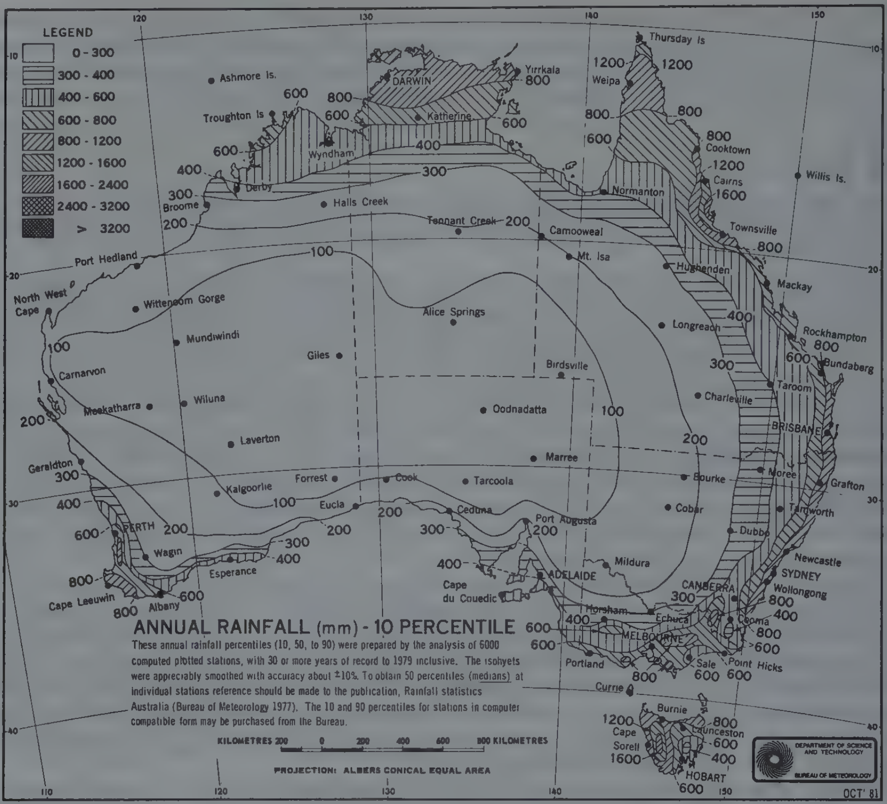
* The amounts that are not exceeded by 10, 50 and 90 per cent of all recordings are the 10, 50 and 90 percentiles or the first, fifth and ninth deciles respectively. The 50 percentile is usually called the median.



LEGEND
0 - 300
300 - 400
400 - 600
600 - 800
800 - 1200
1200 - 1600
1600 - 2400
2400 - 3200
> 3200
Ashmore Is.
Troughton Is
DARWIN
Yirrkala
Katherine
Wyndham
Derby
Broome
Halls Creek
Tennant Creek
Camooweal
Mt. Isa
Thursday Is
Weipa
Normanton
Cooktown
Cairns
Willis Is.
Townsville
Hughenden
Mackay
Port Hedland
North West Cape
Wittenoom Gorge
Mundiwindi
Giles
Alice Springs
Longreach
Rockhampton
Bundaberg
Carnarvon
Meekatharra
Wiluna
Birdsville
Taroom
Charleville
Oodnadatta
BRISBANE
Laverton
Geraldton
Marree
Bourke
Moree
Grafton
Kalgoorlie
Forrest
Cook
Tarcoola
Eucla
Ceduna
Cobar
Tamworth
PERTH
Port Augusta
Dubbo
Wagin
Esperance
Mildura
Newcastle
SYDNEY
Wollongong
Cape Leeuwin
Albany
Cape du Couedic
ADELAIDE
CANBERRA
Horsham
Echuca
Cooma
MELBOURNE
Portland
Sale
Point Hicks
Currie
Burnie
Launceston
Cape Sorell
HOBART
DEPARTMENT OF SCIENCE AND TECHNOLOGY
BUREAU OF METEOROLOGY
OCT' 81
110
120
130
140
150
10
20
30
40

ANNUAL RAINFALL (mm) - 10 PERCENTILE

These annual rainfall percentiles (10, 50, to 90) were prepared by the analysis of 6000 computed plotted stations, with 30 or more years of record to 1979 inclusive. The isohyets were appreciably smoothed with accuracy about ±10%. To obtain 50 percentiles (medians) at individual stations reference should be made to the publication, Rainfall statistics Australia (Bureau of Meteorology 1977). The 10 and 90 percentiles for stations in computer compatible form may be purchased from the Bureau.

KILOMETRES 200 0 200 400 600 800 KILOMETRES

PROJECTION: ALBERS CONICAL EQUAL AREA

FIGURE 1

the mountainous areas of north-east Victoria and some parts of the east coastal slopes there are small pockets with median annual rainfall greater than 2,500 millimetres, but the map scale is too small for these to be shown.

The Snowy Mountains area in New South Wales also has a particularly high rainfall. The highest median annual rainfall isohyet drawn for this region is 3,200 millimetres, and it is likely that small areas have a median annual rainfall approaching 4,000 millimetres on the western slopes above 2,000 metres elevation.

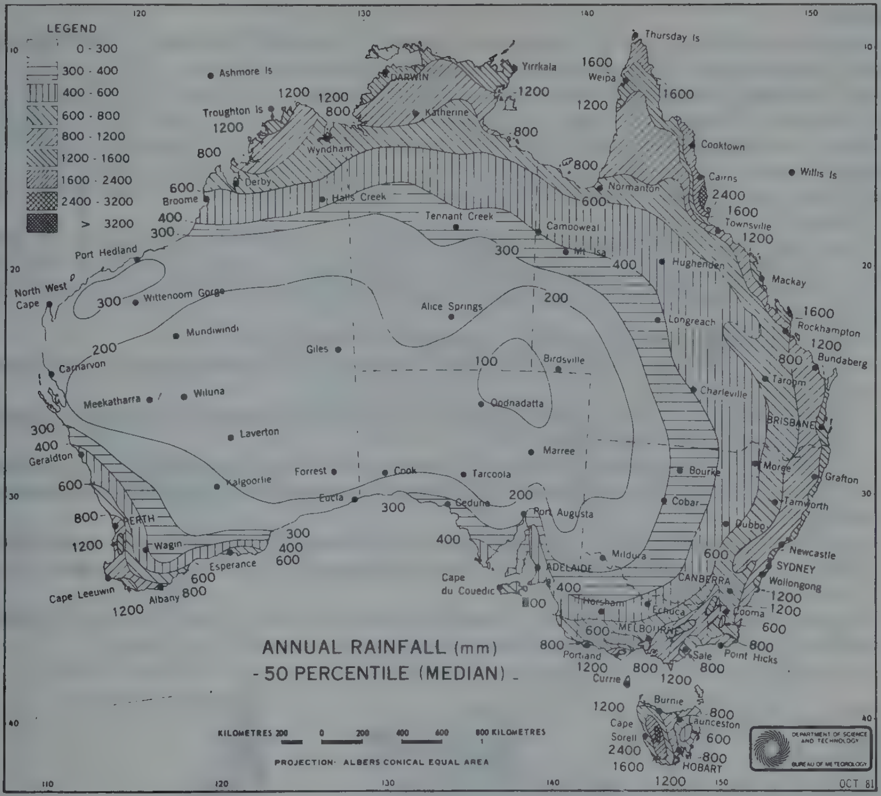
The following table shows the area distribution of the median annual rainfall.

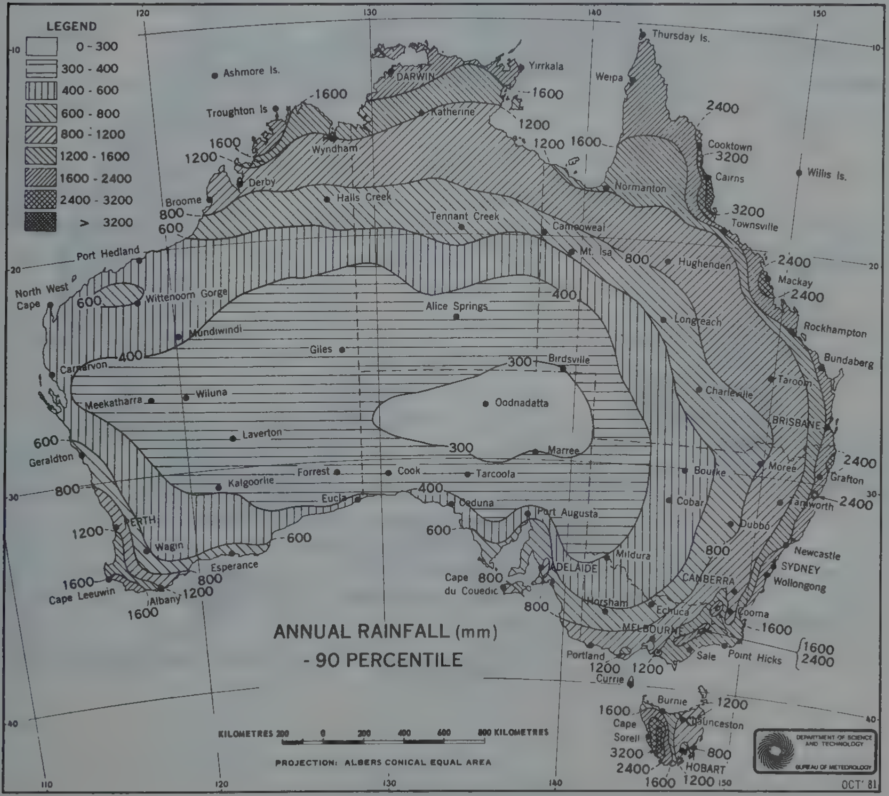
AREA DISTRIBUTION OF MEDIAN ANNUAL RAINFALL: AUSTRALIA

(per cent)

Median annual rainfall	*N.S.W.(a)*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*Aust.*
Under 200 mm . . .	8.0	. .	10.2	74.2	43.5	. .	15.5	29.6
200 to 300 ,, . . .	20.3	6.3	13.0	13.5	29.6	. .	35.6	22.9
300 ,, 400 ,, . . .	19.0	19.2	12.3	6.8	10.5	. .	9.0	11.2
400 ,, 500 ,, . . .	12.4	11.8	13.5	3.2	4.3	. .	6.6	7.6
500 ,, 600 ,, . . .	11.3	14.1	11.6	1.8	3.1	12.2	5.8	6.6
600 ,, 800 ,, . . .	15.1	24.5	20.5	0.5	4.6	18.2	11.6	10.7
800 ,, 1,200 ,, . . .	11.3	17.7	12.6	. .	3.7	25.0	9.6	7.7
Above 1,200 ,, . . .	2.6	6.4	6.3	. .	0.7	44.6	6.3	3.7
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Includes Australian Capital Territory.


LEGEND
0 - 300
300 - 400
400 - 600
600 - 800
800 - 1200
1200 - 1600
1600 - 2400
2400 - 3200
> 3200
ANNUAL RAINFALL (mm)
- 50 PERCENTILE (MEDIAN) -
KILOMETRES 200 0 200 400 600 800 KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA
DEPARTMENT OF SCIENCE AND TECHNOLOGY
BUREAU OF METEOROLOGY
OCT 81
Ashmore Is
Troughton Is
DARWIN
Yirrkala
Katherine
Wyndham
Derby
Broome
Halls Creek
Tennant Creek
Port Hedland
North West Cape
Wittenoom Gorge
Mundiwindi
Carnarvon
Meekatharra
Wiluna
Giles
Alice Springs
Laverton
Geraldton
Kalgoorlie
Forrest
Cook
Tarcoola
Eucla
Ceduna
PERTH
Wagin
Esperance
Cape Leeuwin
Albany
Thursday Is
Weipa
Cooktown
Cairns
Willis Is
Normanton
Townsville
Camooweal
Mt. Isa
Hughenden
Mackay
Longreach
Rockhampton
Bundaberg
Birdsville
Oodnadatta
Taroom
Charleville
BRISBANE
Marree
Bourke
Moree
Grafton
Cobar
Tamworth
Port Augusta
Dubbo
Mildura
Newcastle
SYDNEY
Wollongong
ADELAIDE
CANBERRA
Cape du Couedic
Horsham
Echuca
Cooma
MELBOURNE
Portland
Sale
Point Hicks
Currie
Burnie
Launceston
Cape Sorell
HOBART


LEGEND
0 - 300
300 - 400
400 - 600
600 - 800
800 - 1200
1200 - 1600
1600 - 2400
2400 - 3200
> 3200
ANNUAL RAINFALL (mm)
- 90 PERCENTILE
KILOMETRES 200 0 200 400 600 800 KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA
DEPARTMENT OF SCIENCE AND TECHNOLOGY
BUREAU OF METEOROLOGY
OCT' 81
Ashmore Is.
Troughton Is
DARWIN
Yirrkala
Katherine
Wyndham
Derby
Broome
Halls Creek
Tennant Creek
Port Hedland
North West Cape
Wittenoom Gorge
Mundiwindi
Carnarvon
Meekatharra
Wiluna
Giles
Alice Springs
Laverton
Geraldton
Kalgoorlie
Forrest
Cook
Tarcoola
Eucla
Ceduna
PERTH
Wagin
Esperance
Cape Leeuwin
Albany
Thursday Is.
Weipa
Cooktown
Cairns
Willis Is.
Normanton
Townsville
Camooweal
Mt. Isa
Hughenden
Mackay
Longreach
Rockhampton
Bundaberg
Birdsville
Oodnadatta
Taroom
Charleville
BRISBANE
Marree
Bourke
Moree
Grafton
Cobar
Tamworth
Port Augusta
Dubbo
Mildura
Newcastle
SYDNEY
Wollongong
ADELAIDE
CANBERRA
Cape du Couedic
Horsham
Echuca
Cooma
MELBOURNE
Portland
Sale
Point Hicks
Currie
Burnie
Launceston
Cape Sorell
HOBART

FIGURES 2 AND 3

Seasonal

As outlined above, the rainfall pattern of Australia is strongly seasonal in character with a winter rainfall regime in the south and a summer regime in the north.

The dominance of rainfall over other climatic elements in determining the growth of specific plants in Australia has led to the development of a climatic classification based on two main parameters. The parameters are median annual rainfall and seasonal rainfall incidence. Figure 4 is a reduced version of the seasonal rainfall zones arising from this classification (*see* Bureau of Meteorology publication *Climatic Atlas of Australia, Map Set 5, Rainfall, 1977*).

Evaporation and the concept of rainfall effectiveness are taken into account to some extent in this classification by assigning higher median annual rainfall limits to the summer zones than the corresponding uniform and winter zones. The main features of the seasonal rainfall are:

- marked wet summer and dry winter of northern Australia;
- wet summer and relatively dry winter of south-eastern Queensland and north-eastern New South Wales;
- uniform rainfall in south-eastern Australia—much of New South Wales, parts of eastern Victoria and in southern Tasmania;
- marked wet winter and dry summer of south-west Western Australia and, to a lesser extent, of much of the remainder of southern Australia directly influenced by westerly circulation;
- arid area comprising about half the continent extending from the north-west coast of Western Australia across the interior and reaching the south coast at the head of the Great Australian Bight.

The seasonal rainfall classification (*Climatic Atlas, Map Set 5*) can be further reduced to provide a simplified distribution of seven climatic zones as shown in Figure 5.

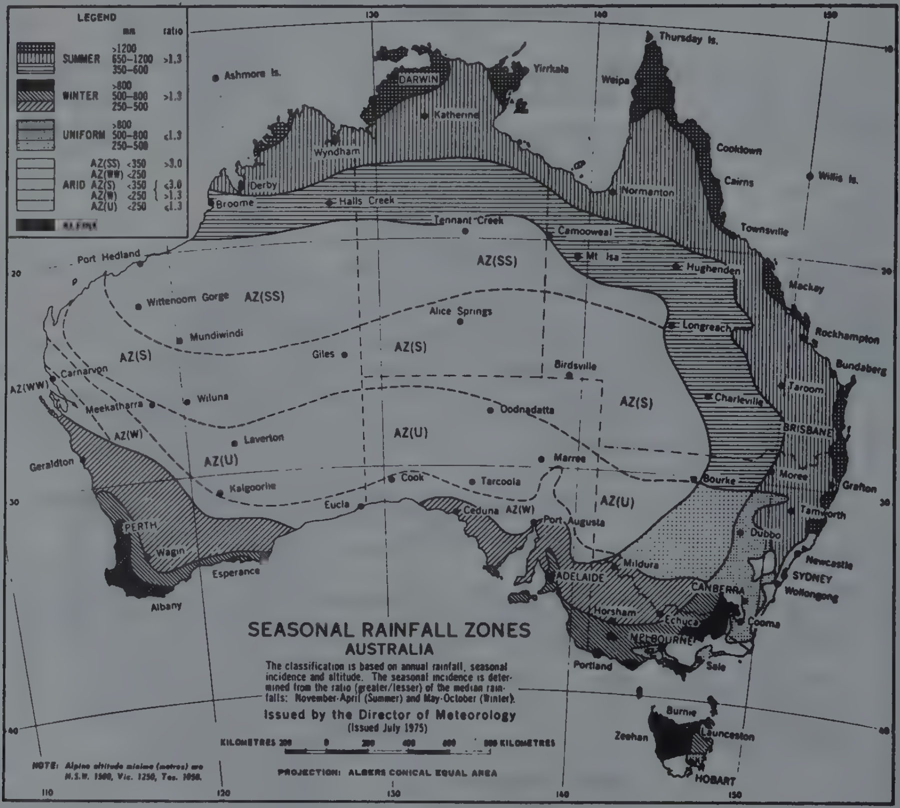
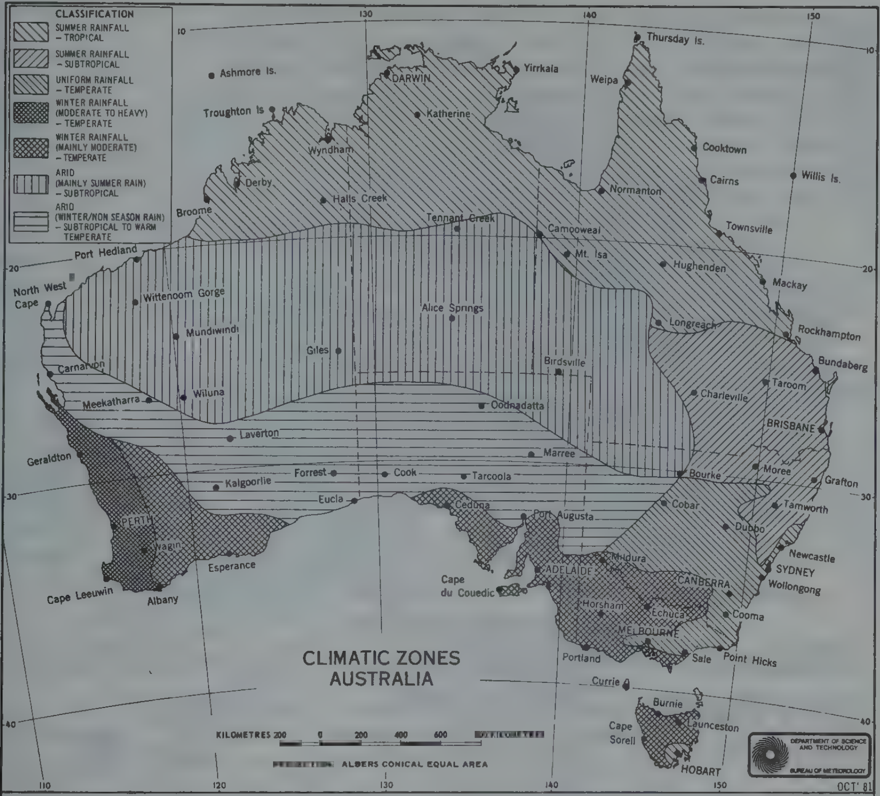

LEGEND
mm ratio
SUMMER >1200 650–1200 350–600 >1.3
WINTER >800 500–800 250–500 >1.3
UNIFORM >800 500–800 250–500 ≤1.3
ARID AZ(SS) <350 >3.0
AZ(WW) <250
AZ(S) <350 <3.0
AZ(W) <250 >1.3
AZ(U) <250 ≤1.3
ALPINE
Ashmore Is.
DARWIN
Katherine
Yirrkala
Weipa
Thursday Is.
Wyndham
Derby
Broome
Halls Creek
Tennant Creek
Camooweal
Normanton
Cooktown
Cairns
Willis Is.
Townsville
Mt Isa
Hughenden
Mackay
Port Hedland
Wittenoom Gorge
AZ(SS)
Mundiwindi
Alice Springs
Longreach
Rockhampton
Giles
AZ(S)
Birdsville
Bundaberg
Carnarvon
AZ(WW)
Wiluna
Meekatharra
Oodnadatta
Taroom
Charleville
BRISBANE
AZ(W)
Laverton
AZ(U)
Geraldton
Marree
Moree
Kalgoorlie
Cook
Tarcoola
Bourke
Grafton
Eucla
Ceduna
Port Augusta
Tamworth
PERTH
Wagin
Dubbo
Esperance
Mildura
Newcastle
SYDNEY
Wollongong
ADELAIDE
CANBERRA
Albany
Horsham
Echuca
Cooma
MELBOURNE
Portland
Sale
Burnie
Zeehan
Launceston
HOBART
SEASONAL RAINFALL ZONES
AUSTRALIA
The classification is based on annual rainfall, seasonal incidence and altitude. The seasonal incidence is determined from the ratio (greater/lesser) of the median rainfalls: November-April (Summer) and May-October (Winter).
Issued by the Director of Meteorology
(Issued July 1975)
KILOMETRES 200 0 200 400 600 800 KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA
NOTE: Alpine altitude minima (metres) are N.S.W. 1500, Vic. 1250, Tas. 1050.
110
120
130
140
150
10
20
30
40

FIGURE 4


CLASSIFICATION
▧ SUMMER RAINFALL – TROPICAL
▨ SUMMER RAINFALL – SUBTROPICAL
▧ UNIFORM RAINFALL – TEMPERATE
▩ WINTER RAINFALL (MODERATE TO HEAVY) – TEMPERATE
▩ WINTER RAINFALL (MAINLY MODERATE) – TEMPERATE
▥ ARID (MAINLY SUMMER RAIN) – SUBTROPICAL
▤ ARID (WINTER/NON SEASON RAIN) – SUBTROPICAL TO WARM TEMPERATE
Ashmore Is.
Troughton Is
DARWIN
Yirrkala
Thursday Is.
Weipa
Katherine
Wyndham
Derby
Halls Creek
Broome
Cooktown
Cairns
Willis Is.
Normanton
Tennant Creek
Camooweal
Townsville
Port Hedland
Mt. Isa
Hughenden
Mackay
North West Cape
Wittenoom Gorge
Alice Springs
Longreach
Rockhampton
Mundiwindi
Giles
Birdsville
Bundaberg
Carnarvon
Taroom
Wiluna
Meekatharra
Oodnadatta
Charleville
BRISBANE
Laverton
Marree
Geraldton
Forrest
Cook
Tarcoola
Bourke
Moree
Grafton
Kalgoorlie
Eucla
Ceduna
Cobar
Tamworth
Port Augusta
PERTH
Dubbo
Wagin
Esperance
Mildura
Newcastle
ADELAIDE
SYDNEY
Wollongong
Cape Leeuwin
Albany
Cape du Couedic
CANBERRA
Horsham
Echuca
Cooma
MELBOURNE
CLIMATIC ZONES AUSTRALIA
Portland
Sale
Point Hicks
Currie
Burnie
Cape Sorell
Launceston
HOBART
KILOMETRES 200 0 200 400 600
ALBERS CONICAL EQUAL AREA
DEPARTMENT OF SCIENCE AND TECHNOLOGY
BUREAU OF METEOROLOGY
OCT' 81
10
20
30
40
110
120
130
140
150

CLASSIFICATION	SEASONAL CHARACTERISTICS SUMMER	SEASONAL CHARACTERISTICS WINTER
Summer Rainfall – Tropical	Heavy periodic rains (heavier in coastal & highland areas) Hot generally Humid in coastal areas	Generally rainless Mild to warm Dry
Summer Rainfall – Subtropical	Heavy periodic rains (heavier in coastal & highland areas) Mainly hot Humid in highlands & coastal areas	Some significant rain Mild
Uniform Rainfall – Temperate	Mainly reliable rain Warm to hot	Mainly reliable rain Cool to cold
Winter Rainfall (moderate to heavy) – Temperate	Irregular rain, mostly light Warm to hot	Reliable rain (moderate to heavy) Cool to mild
Winter Rainfall (mainly moderate) – Temperate	Mostly light irregular rain Warm to hot	Reliable rain (mainly moderate) Cool to cold
Arid (mainly summer rain) – Subtropical	Variably rain Hot to extreme Very dry	Mainly irregular light rain Mild to warm Dry
Arid (winter or non–seasonal rain) – Warm Temperate to Subtropical	Very irregular rain Hot to extreme Very dry	Variable rain, mainly light Cool to mild Dry

[Reference:- Climatic Atlas of Australia, Map set 5, Bureau of Meteorology 1975]

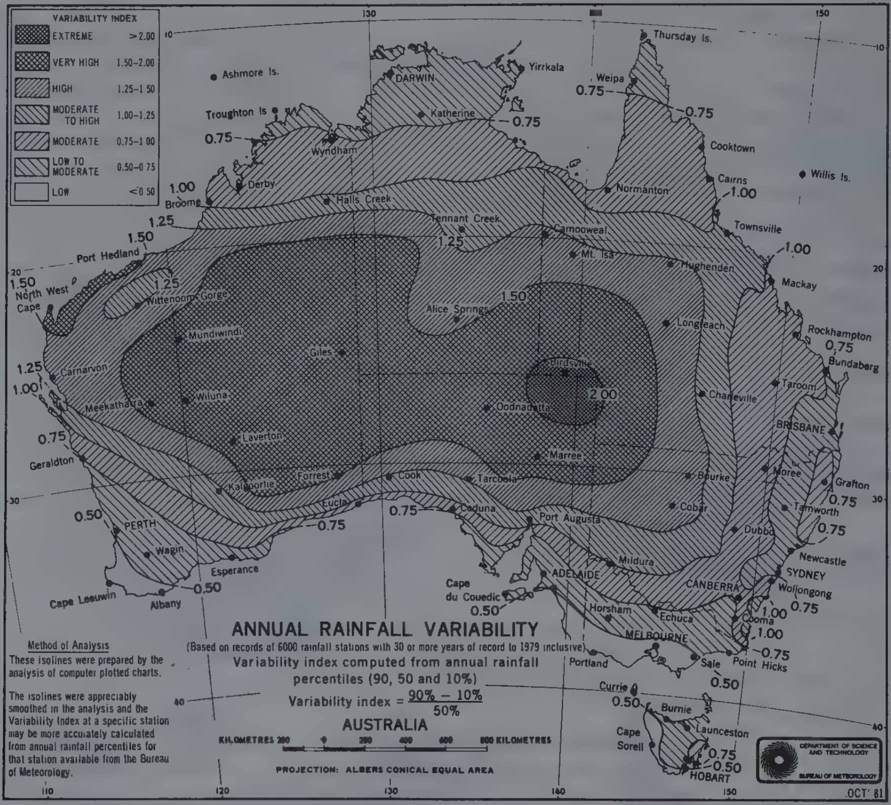
FIGURE 5

Variability

The adequate presentation of rainfall variability over an extensive geographical area is difficult. Probably the best measures are found in tables compiled for a number of individual stations in some of the Climatic Survey districts. These tables show the percentage chances of receiving specified amounts of rainfall in monthly, seasonal or annual time spans. Statistical indexes of rainfall variation based on several techniques have been used to compile maps showing main features of the variability of annual rainfall over Australia.

One index for assessing the variability of annual rainfall is given by the ratio of the 90—10 percentile range to the 50 percentile (median value):

$$\text{i.e. Variability Index} = \left\{ \frac{90 - 10}{50} \right\} \text{percentiles.}$$


VARIABILITY INDEX
EXTREME >2.00
VERY HIGH 1.50–2.00
HIGH 1.25–1.50
MODERATE TO HIGH 1.00–1.25
MODERATE 0.75–1.00
LOW TO MODERATE 0.50–0.75
LOW <0.50
Ashmore Is.
Troughton Is
DARWIN
Yirrkala
Katherine
Wyndham
Derby
Broome
Halls Creek
Tennant Creek
Camooweal
Mt. Isa
Thursday Is.
Weipa
Cooktown
Cairns
Willis Is.
Normanton
Townsville
Hughenden
Mackay
Rockhampton
Bundaberg
Longreach
Taroom
Charleville
BRISBANE
Port Hedland
North West Cape
Wittenoom Gorge
Mundiwindi
Giles
Alice Springs
Birdsville
Oodnadatta
Carnarvon
Meekatharra
Wiluna
Laverton
Geraldton
Kalgoorlie
Forrest
Cook
Tarcoola
Marree
Bourke
Moree
Grafton
Tamworth
Cobar
Eucla
Ceduna
Port Augusta
Dubbo
Newcastle
SYDNEY
Wollongong
PERTH
Wagin
Esperance
Cape Leeuwin
Albany
Cape du Couedic
ADELAIDE
Mildura
CANBERRA
Horsham
Echuca
Cooma
MELBOURNE
Portland
Sale
Point Hicks
Currie
Burnie
Launceston
Cape Sorell
HOBART
0.50
0.75
1.00
1.25
1.50
2.00
KILOMETRES 200 0 200 400 600 800 KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA
DEPARTMENT OF SCIENCE AND TECHNOLOGY
BUREAU OF METEOROLOGY
OCT' 81
10
20
30
40
110
120
130
140
150

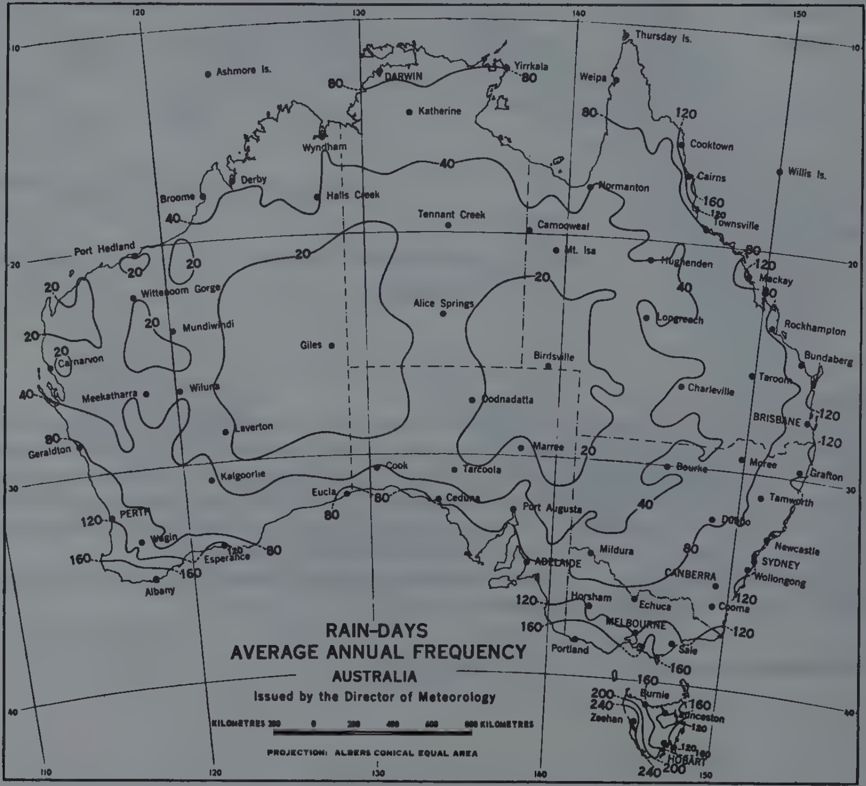
ANNUAL RAINFALL VARIABILITY
(Based on records of 6000 rainfall stations with 30 or more years of record to 1979 inclusive)
Variability index computed from annual rainfall percentiles (90, 50 and 10%)

$$\text{Variability index} = \frac{90\% - 10\%}{50\%}$$

AUSTRALIA

Method of Analysis
These isolines were prepared by the analysis of computer plotted charts.

The isolines were appreciably smoothed in the analysis and the Variability Index at a specific station may be more accurately calculated from annual rainfall percentiles for that station available from the Bureau of Meteorology.


Ashmore Is.
DARWIN
Yirrkala
Katherine
Wyndham
Derby
Broome
Halls Creek
Tennant Creek
Camooweal
Mt. Isa
Thursday Is.
Weipa
Cooktown
Cairns
Willis Is.
Normanton
Townsville
Hughenden
Mackay
Rockhampton
Bundaberg
Longreach
Taroom
Charleville
BRISBANE
Port Hedland
Wittenoom Gorge
Mundiwindi
Giles
Alice Springs
Birdsville
Oodnadatta
Carnarvon
Meekatharra
Wiluna
Laverton
Geraldton
Kalgoorlie
Cook
Tarcoola
Marree
Bourke
Moree
Grafton
Tamworth
Eucla
Ceduna
Port Augusta
Dubbo
Newcastle
SYDNEY
Wollongong
PERTH
Wagin
Esperance
Albany
ADELAIDE
Mildura
CANBERRA
Horsham
Echuca
Cooma
MELBOURNE
Portland
Sale
Burnie
Zeehan
Launceston
HOBART
20
40
80
120
160
200
240
KILOMETRES 200 0 200 400 600 800 KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA
10
20
30
40
110
120
130
140
150

RAIN-DAYS
AVERAGE ANNUAL FREQUENCY
AUSTRALIA
Issued by the Director of Meteorology

FIGURES 6 AND 7

Variability based on this relationship (Gaffney 1975) is shown in Figure 6. The region of high to extreme variability shown in Figure 6 lies mostly in the arid zone with summer rainfall incidence, AZ(S) defined on Figure 4. In the winter rainfall zones, the variability is generally low to moderate as exemplified by the south-west of Western Australia. In the tropics, random cyclone visitations cause extreme variations in rainfall from year to year: at Onslow (Western Australia), annual totals varied from 15 millimetres in 1912 to 1,085 millimetres in 1961 and, in the four consecutive years 1921 to 1924, the annual totals were 566, 69, 682 and 55 millimetres respectively. At Whim Creek (Western Australia), where 747 millimetres have been recorded in a single day, only 4 millimetres were received in the whole of 1924. Great variability can also occur in the heavy rainfall areas: at Tully (Queensland), the annual rainfalls have varied from 7,898 millimetres in 1950 to 2,486 millimetres in 1961.

For more information on variability, *see Year Book* No. 68.

Rainday frequency

The average number of days per year with rainfall of 0.2 millimetres or more is shown in Figure 7.

The frequency of rain-days exceeds 150 per year in Tasmania (with a maximum of over 200 in western Tasmania), southern Victoria, parts of the north Queensland coast and in the extreme south-west of Western Australia. Over most of the continent the frequency is less than 50 rain-days per year. The area of low rainfall with high variability, extending from the north-west coast of Western Australia through the interior of the continent, has less than 25 rain-days per year. In the high rainfall areas of northern Australia the number of rain-days is about 80 per year, but heavier falls occur in this region than in southern regions.

Intensity

The highest rainfall intensities for some localities are shown in the table below.

HIGHEST RAINFALL INTENSITIES IN SPECIFIED PERIODS

(millimetres)

(*Source:* Pluviograph records in Bureau of Meteorology archives)

Station	*Period of record*	*Years of complete records*	*Period in hours* 1	3	6	12	24
			mm	mm	mm	mm	mm
Adelaide	1897–1980	80	69	133	141	141	141
Alice Springs	1951–1980	28	75	77	87	108	150
Brisbane	1911–1986	76	88	142	182	266	465
Broome	1948–1979	32	112	157	185	313	351
Canberra	1932–1979	44	51	68	71	89	139
Carnarvon	1956–1979	24	32	63	83	95	108
Charleville	1953–1980	28	42	66	75	111	142
Cloncurry	1953–1975	20	59	118	164	173	204
Darwin (Airport)	1953–1980	25	88	138	214	260	277
Esperance	1963–1979	15	23	45	62	68	79
Hobart	1911–1980	67	28	56	87	117	168
Meekatharra	1953–1979	25	33	67	81	99	112
Melbourne	1878–1980	90	79	83	86	97	130
Mildura	1953–1977	23	49	60	65	65	91
Perth	1946–1980	33	32	38	47	64	93
Sydney	1913–1979	73	121	190	198	233	328
Townsville	1953–1980	26	88	158	235	296	319

These figures represent intensities over only small areas around the recording points because turbulence and exposure characteristics of the measuring gauge may vary over a distance of a few metres. The highest rainfall measured for one hour is 330 millimetres at Deeral, Queensland, 13 March 1936. The highest 24-hour (9 a.m. to 9 a.m.) falls are listed below. Most of the very high 24-hour falls (above 700 millimetres) have occurred in the coastal strip of Queensland, where a tropical cyclone moving close to mountainous terrain provides ideal conditions for spectacular falls. The highest 24-hour fall (1,140 millimetres) occurred at Bellenden Ker (Top Station) on 4 January 1979. Bellenden Ker (Top Station) has also recorded the highest monthly rainfall in Australia (5,387 millimetres in January 1979).

HIGHEST DAILY RAINFALLS

State	*Station*	*Date*	*Amount*
			mm
New South Wales	Dorrigo	21.2.1954	809
	Cordeaux River	14.2.1898	574
Victoria	Tanybryn	22.3.1983	315
	Baloak	18.2.1951	275
Queensland	Bellenden Ker (Top Station)	4.1.1979	1,140
	Crohamhurst	3.2.1893	907
	Finch Hatton	18.2.1958	878
	Mount Dangar	20.1.1970	869
South Australia	Stansbury	18.2.1946	222
	Stirling	17.4.1889	208
Western Australia	Whim Creek	3.4.1898	747
	Kilto	4.12.1970	635
	Fortescue	3.5.1890	593
Tasmania	Cullenswood	22.3.1974	352
	Mathinna	5.4.1929	337
Northern Territory	Roper Valley	15.4.1963	545
	Groote Eylandt	28.3.1953	513

The highest annual rainfalls are listed by State in the following table.

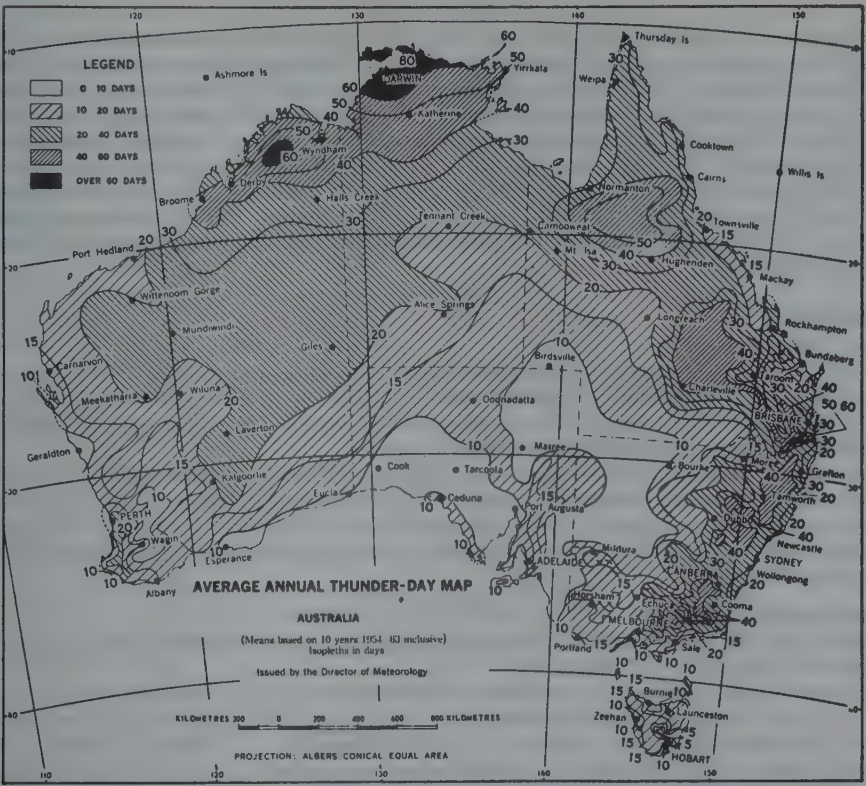
HIGHEST ANNUAL RAINFALLS
(All years to 1980 inclusive)

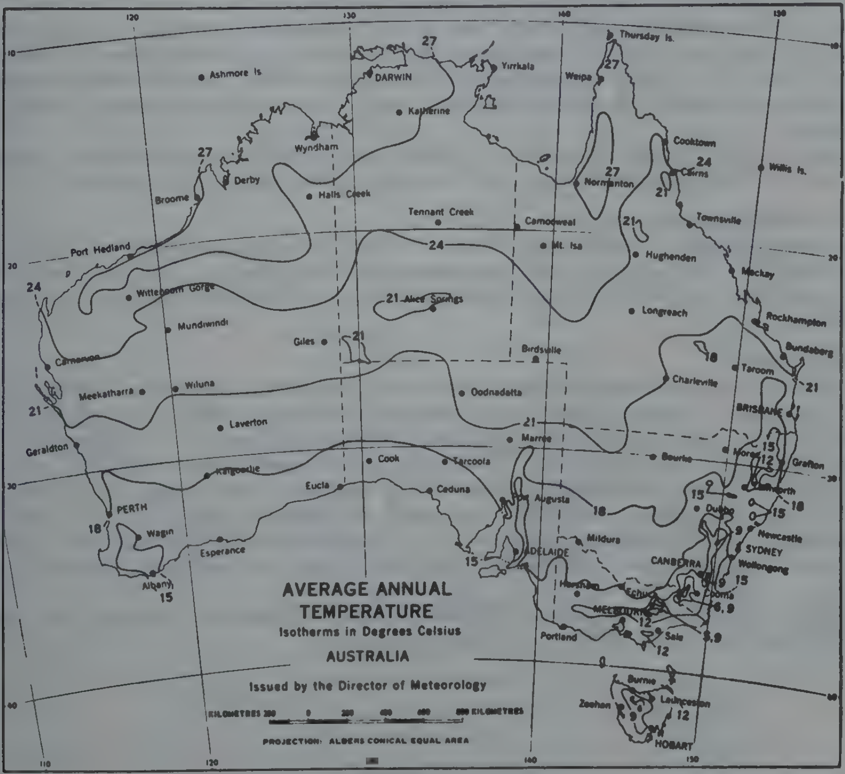
State	*Station*	*Year*	*Amount*
			mm
New South Wales	Tallowwood Point	1950	4,540
Victoria	Mount Buffalo Chalet	1917	3,342
Queensland	Bellenden Ker (Top Station)	1979	11,251
South Australia	Aldgate State School	1917	1,851
Western Australia	Mitchell Plateau	1973	2,154
Tasmania	Lake Margaret	1948	4,505
Northern Territory	Elizabeth Downs	1973	2,966

Thunderstorms and hail

A thunder-day at a given location is a calendar day on which thunder is heard at least once. Figure 8 shows isopleths (isobronts) of the average annual number of thuder-days which varies from 80 per year near Darwin to less than 10 per year over parts of the southern regions. Convectional processes during the summer wet season cause high thunderstorm incidence in northern Australia. The generally high incidence (40–60 annually) over the eastern upland areas is produced mainly by orographic uplift of moist air streams.

Hail, mostly of small size (less than 10 millimetres diameter), occurs with winter/spring cold frontal activity in southern Australia. Summer thunderstorms, particularly over the uplands of eastern Australia, sometimes produce large hail (greater than 10 millimetres diameter). Hail capable of piercing light gauge galvanised iron occurs at irregular intervals and sometimes causes widespread damage.


LEGEND
0 10 DAYS
10 20 DAYS
20 40 DAYS
40 60 DAYS
OVER 60 DAYS
AVERAGE ANNUAL THUNDER-DAY MAP
AUSTRALIA
(Means based on 10 years 1954–63 inclusive)
Isopleths in days
Issued by the Director of Meteorology
KILOMETRES 200 0 200 400 600 800 KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA
Thursday Is
Ashmore Is
DARWIN
Yirrkala
Weipa
Katherine
Wyndham
Cooktown
Cairns
Willis Is
Derby
Halls Creek
Broome
Normanton
Tennant Creek
Townsville
Camooweal
Port Hedland
Mt Isa
Hughenden
Mackay
Wittenoom Gorge
Alice Springs
Longreach
Rockhampton
Mundiwindi
Giles
Bundaberg
Carnarvon
Birdsville
Taroom
Meekatharra
Wiluna
Charleville
Oodnadatta
BRISBANE
Laverton
Marree
Geraldton
Cook
Tarcoola
Bourke
Moree
Grafton
Kalgoorlie
Eucla
Ceduna
Tamworth
Port Augusta
Dubbo
PERTH
Wagin
Mildura
Newcastle
Esperance
ADELAIDE
SYDNEY
CANBERRA
Wollongong
Albany
Horsham
Echuca
Cooma
MELBOURNE
Portland
Sale
Burnie
Zeehan
Launceston
HOBART


AVERAGE ANNUAL TEMPERATURE
Isotherms in Degrees Celsius
AUSTRALIA
Issued by the Director of Meteorology
KILOMETRES 200 0 200 400 600 800 KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA
Thursday Is.
Ashmore Is
DARWIN
Yirrkala
Weipa
Katherine
Wyndham
Cooktown
Cairns
Willis Is.
Derby
Halls Creek
Broome
Normanton
Tennant Creek
Townsville
Camooweal
Mt. Isa
Port Hedland
Hughenden
Mackay
Wittenoom Gorge
Alice Springs
Longreach
Rockhampton
Mundiwindi
Giles
Bundaberg
Carnarvon
Birdsville
Taroom
Meekatharra
Wiluna
Charleville
Oodnadatta
BRISBANE
Laverton
Marree
Geraldton
Cook
Tarcoola
Bourke
Moree
Grafton
Kalgoorlie
Eucla
Ceduna
Port Augusta
Tamworth
Dubbo
PERTH
Wagin
Mildura
Newcastle
Esperance
ADELAIDE
SYDNEY
CANBERRA
Wollongong
Albany
Horsham
Echuca
Cooma
MELBOURNE
Portland
Sale
Burnie
Zeehan
Launceston
HOBART

FIGURES 8 AND 9

Snow

Generally, snow covers much of the Australian Alps above 1,500 metres for varying periods from late autumn to early spring. Similarly, in Tasmania the mountains are covered fairly frequently above 1,000 metres in these seasons. The area, depth and duration are highly variable. No snow falls in the altitude range of 500–1,000 metres in some years. Snowfalls at levels below 500 metres are occasionally experienced in southern Australia, particularly in the foothill areas of Tasmania and Victoria, but falls are usually light and short lived. In some seasons, parts of the eastern uplands above 1,000 metres from Victoria to south-eastern Queensland have been covered with snow for several weeks. In ravines around Mount Kosciusko (2,228 metres) small areas of snow may persist through summer but there are no permanent snowfields.

Temperature

Average temperatures

Average annual air temperatures, as shown in Figure 9, range from 28°C along the Kimberley coast in the extreme north of Western Australia to 4°C in the alpine areas of south-eastern Australia. Although annual temperature may be used for broad comparisons, monthly temperatures are required for detailed analyses.

July is the month with the lowest average temperature in all parts of the continent. The months with the highest average temperature are January or February in the south and December in the north (except in the extreme north and north-west where it is November). The slightly lower temperatures of mid-summer in the north are due to the increase in cloud during the wet season.

Average monthly maxima

Maps of average maximum and minimum temperature for the month of January and July are shown in Figures 10 to 13 inclusive.

In January, average maximum temperatures exceed 35°C over a vast area of the interior and exceed 40°C over appreciable areas of the north-west. The consistently hottest part of Australia in terms of summer maxima is around Marble Bar in Western Australia (150 kilometres south-east of Port Hedland) where the average is 41°C and daily maxima during summer may exceed 40°C consecutively for several weeks at a time.

The marked gradients of isotherms of maximum temperature in summer in coastal areas, particularly along the south and west coasts, are due to the penetration inland of fresh sea breezes initiated by the sharp temperature discontinuities between the land and sea surfaces. There are also gradients of a complex nature in south-east coastal areas caused primarily by the uplands.

In July, a more regular latitudinal distribution of average maxima is evident. Maxima range from 30°C near the north coast to 5°C in the alpine areas of the south-east.

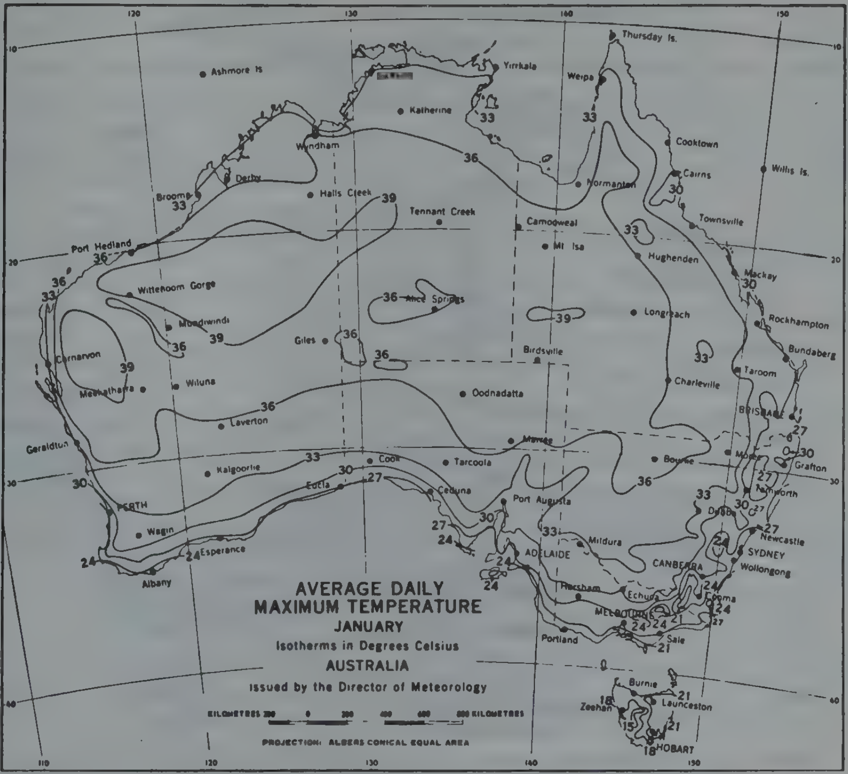
Average monthly minima

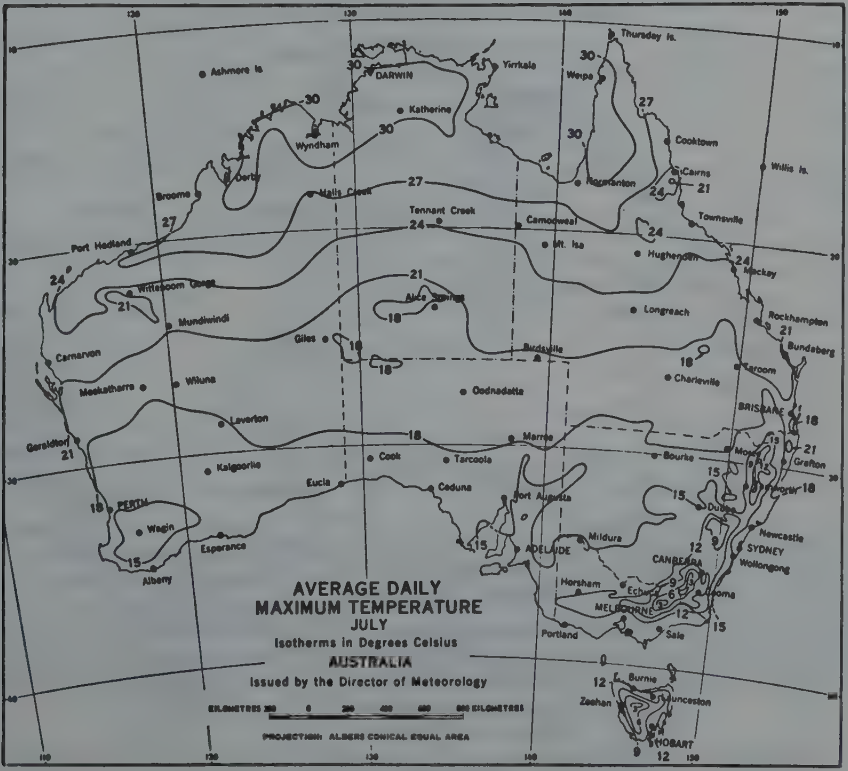
In January, average minima range from 27°C on the north-west coast to 5°C in the alpine areas of the south-east. In July, average minima fall below 5°C in areas south of the tropics (away from the coasts). Alpine areas record the lowest temperatures; the July average is as low as –5°C.

Extreme maxima

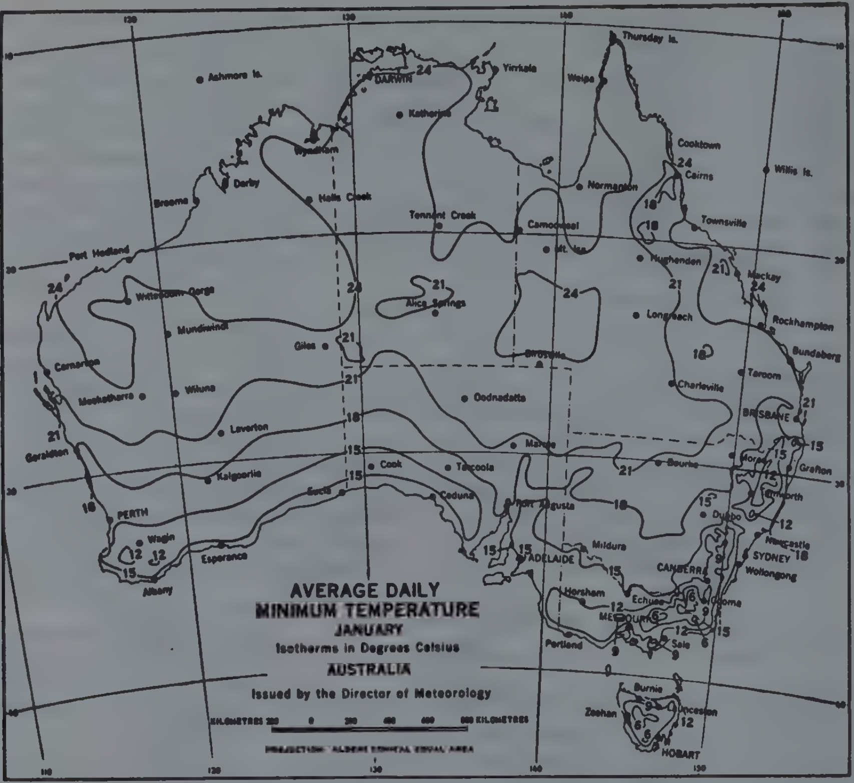
Temperatures have exceeded 45°C at nearly all inland stations more than 150 kilometres from the coast and at many places on the north-west and south coasts. Temperatures have exceeded 50°C at some inland stations and at a few near the coast. It is noteworthy that Eucla on the south coast has recorded 50.7°C, the highest temperature in Western Australia. This is due to the long trajectory over land of hot north-west winds from the Marble Bar area. Although the highest temperature recorded in Australia was 53.1°C at Cloncurry (Queensland), more stations have exceeded 50°C in western New South Wales than in other areas due to the long land trajectory of hot winds from the north-west interior of the continent.

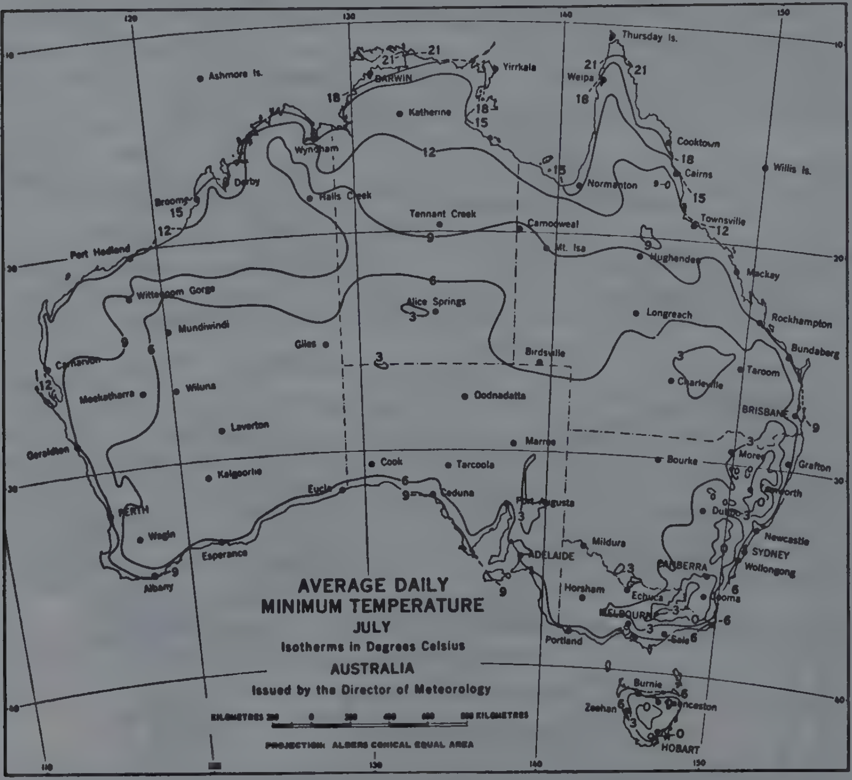
Extreme maximum temperatures recorded at selected stations, including the highest recorded in each State, are shown in the table below.


AVERAGE DAILY
MAXIMUM TEMPERATURE
JANUARY
Isotherms in Degrees Celsius
AUSTRALIA
Issued by the Director of Meteorology
KILOMETRES 200 0 200 400 600 800 KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA
Thursday Is.
Ashmore Is
Yirrkala
Weipa
Katherine
Wyndham
Cooktown
Willis Is.
Cairns
Derby
Normanton
Broome
Halls Creek
Tennant Creek
Townsville
Camooweal
Mt Isa
Hughenden
Port Hedland
Mackay
Wittenoom Gorge
Alice Springs
Longreach
Rockhampton
Mundiwindi
Giles
Bundaberg
Birdsville
Carnarvon
Taroom
Charleville
Meekatharra
Wiluna
Oodnadatta
Laverton
Brisbane
Marree
Geraldton
Moree
Grafton
Kalgoorlie
Cook
Tarcoola
Bourke
Eucla
Tamworth
Ceduna
Port Augusta
Perth
Dubbo
Wagin
Newcastle
Mildura
Esperance
Adelaide
Sydney
Canberra
Wollongong
Albany
Horsham
Echuca
Cooma
Melbourne
Portland
Sale
Burnie
Zeehan
Launceston
Hobart
33
36
39
30
27
24
21
18
15


AVERAGE DAILY
MAXIMUM TEMPERATURE
JULY
Isotherms in Degrees Celsius
AUSTRALIA
Issued by the Director of Meteorology
KILOMETRES 200 0 200 400 600 800 KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA
Thursday Is.
Ashmore Is
Darwin
Yirrkala
Weipa
Katherine
Wyndham
Cooktown
Willis Is.
Cairns
Derby
Normanton
Broome
Halls Creek
Tennant Creek
Townsville
Camooweal
Mt. Isa
Hughenden
Port Hedland
Mackay
Wittenoom Gorge
Alice Springs
Longreach
Rockhampton
Mundiwindi
Giles
Bundaberg
Birdsville
Carnarvon
Taroom
Charleville
Meekatharra
Wiluna
Oodnadatta
Laverton
Brisbane
Marree
Geraldton
Moree
Grafton
Kalgoorlie
Cook
Tarcoola
Bourke
Eucla
Tamworth
Ceduna
Port Augusta
Perth
Dubbo
Wagin
Newcastle
Mildura
Esperance
Adelaide
Sydney
Canberra
Wollongong
Albany
Horsham
Echuca
Cooma
Melbourne
Portland
Sale
Burnie
Zeehan
Launceston
Hobart
30
27
24
21
18
15
12
9
6

FIGURES 10 AND 11


AVERAGE DAILY
MINIMUM TEMPERATURE
JANUARY
Isotherms in Degrees Celsius
AUSTRALIA
Issued by the Director of Meteorology
KILOMETRES 200 0 200 400 600 800 KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA
Thursday Is.
Ashmore Is.
DARWIN
Yirrkala
Weipa
Katherine
Wyndham
Cooktown
Cairns
Willis Is.
Derby
Halls Creek
Normanton
Broome
Tennant Creek
Camooweal
Townsville
Mt. Isa
Port Hedland
Hughenden
Mackay
Wittenoom Gorge
Alice Springs
Longreach
Rockhampton
Mundiwindi
Giles
Bundaberg
Birdsville
Carnarvon
Taroom
Meekatharra
Wiluna
Oodnadatta
Charleville
BRISBANE
Laverton
Marree
Geraldton
Cook
Tarcoola
Bourke
Moree
Grafton
Kalgoorlie
Eucla
Ceduna
Tamworth
Port Augusta
Dubbo
PERTH
Wagin
Mildura
Newcastle
SYDNEY
Esperance
ADELAIDE
Wollongong
CANBERRA
Albany
Horsham
Echuca
Cooma
MELBOURNE
Portland
Sale
Burnie
Zeehan
Launceston
HOBART
24
21
18
15
12
9
6
120
130
140
150
110
10
20
30
40


AVERAGE DAILY
MINIMUM TEMPERATURE
JULY
Isotherms in Degrees Celsius
AUSTRALIA
Issued by the Director of Meteorology
KILOMETRES 200 0 200 400 600 800 KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA
Thursday Is.
Ashmore Is.
DARWIN
Yirrkala
Weipa
Katherine
Wyndham
Cooktown
Cairns
Willis Is.
Derby
Halls Creek
Normanton
Broome
Tennant Creek
Camooweal
Townsville
Port Hedland
Mt. Isa
Hughenden
Mackay
Wittenoom Gorge
Alice Springs
Longreach
Rockhampton
Mundiwindi
Giles
Bundaberg
Birdsville
Carnarvon
Taroom
Charleville
Meekatharra
Wiluna
Oodnadatta
BRISBANE
Laverton
Marree
Geraldton
Cook
Tarcoola
Bourke
Moree
Grafton
Kalgoorlie
Eucla
Ceduna
Tamworth
Port Augusta
Dubbo
PERTH
Wagin
Mildura
Newcastle
SYDNEY
Esperance
ADELAIDE
Wollongong
CANBERRA
Albany
Horsham
Echuca
Cooma
MELBOURNE
Portland
Sale
Burnie
Zeehan
Launceston
HOBART
21
18
15
12
9
6
3
0
120
130
140
150
110
10
20
30
40

FIGURES 12 AND 13

EXTREME MAXIMUM TEMPERATURES

(All years to September 1985)

Station	*°C*	*Date*	*Station*	*°C*	*Date*
New South Wales—			Western Australia—		
Bourke	52.8	17.1.1877	Eucla	50.7	22.1.1906
Walgett	50.1	2.1.1903	Mundrabilla	49.8	3.1.1979
Wilcannia	50.0	11.1.1939	Forrest	49.8	13.1.1979
Victoria—			Madura	49.4	7.1.1971
Mildura	50.8	6.1.1906	Tasmania—		
Swan Hill	49.4	18.1.1906	Bushby Park	40.8	26.12.1945
Queensland—			Hobart	40.8	4.1.1976
Cloncurry	53.1	16.1.1889	Northern Territory—		
Winton	50.7	14.12.1888	Finke	48.3	2.1.1960
Birdsville	50.0	24.12.1972	Jervois	47.5	3.1.1978
South Australia—			Australian Capital Territory—		
Oodnadatta	50.7	2.1.1960	Canberra (Acton)	42.8	11.1.1939
Marree	49.4	2.1.1960			
Whyalla	49.4	2.1.1960			

Extreme minima

The lowest temperatures in Australia have been recorded in the Snowy Mountains, where Charlotte Pass (elevation 1,760 metres) has recorded −22.2°C on 14 July 1945 and 22 August 1947. Temperatures have fallen below −5°C at most inland places south of the tropics and at some places within a few kilometres of southern coasts. At Eyre, on the south coast of Western Australia, a minimum temperature of −4.3°C has been recorded, and at Swansea, on the east coast of Tasmania, the temperature has fallen as low as −5.0°C.

In the tropics, extreme minima below 0°C have been recorded at many places away from the coasts—as far north as Herberton, Queensland (−5.0°C). Even very close to the tropical coastline, temperatures have fallen to 0°C, a low recording being −0.8°C for Mackay.

The next table shows extreme minimum temperatures recorded at specified stations, including the lowest recorded in each State.

EXTREME MINIMUM TEMPERATURES

Station	*°C*	*Date*	*Station*	*°C*	*Date*
New South Wales—			Western Australia—		
Charlotte Pass	−22.2	14.7.1945	Booylgoo	−6.7	12.7.1969
		22.8.1947	Wandering	−5.7	1.6.1964
Kiandra	−20.6	2.8.1929	Tasmania—		
Kosciusko Hotel	−14.4	3.7.1929	Shannon	−13.0	30.6.1983
		6.7.1939	Buitlers Gorge	−13.0	30.6.1983
Cooma	−11.4	16.7.1979	Tarraleah	−13.0	30.6.1983
Victoria—			Northern Territory		
Mount Hotham	−12.8	13.8.1947	Alice Springs	−7.5	12.7.1976
Omeo	−11.7	15.6.1965	Tempe Downs	−6.9	24.7.1971
Bairnsdale	−7.2	16.8.1896	Australian Capital Territory—		
Queensland—			Gugdenby	−14.6	11.7.1971
Stanthorpe	−11.0	4.7.1895			
Mitchell	−9.4	15.8.1979			
Nanango	−9.3	16.7.1918			
South Australia—					
Yongala	−8.2	20.7.1976			
Kyancutta	−7.0	9.7.1959			
Mt. Crawford	−7.0	8.6.1982			
		20.7.1982			

Heat waves

Periods with a number of successive days having a temperature higher than 40°C are relatively common in summer over parts of Australia. With the exception of the north-west coast of Western Australia, however, most coastal areas rarely experience more than three successive days of such conditions. The frequency increases inland, and periods of up to ten successive days have been recorded at many inland stations. This figure increases in western Queensland and north-western Western Australia to more than twenty days in places. The central part of the Northern Territory and the Marble Bar-Nullagine area of Western Australia have recorded the most prolonged heat waves. Marble Bar is the only station in the world where temperatures of more than 37.8°C (100°F) have been recorded on as many as 161 consecutive days (30 October 1923–7 April 1924).

Heat waves are experienced in the coastal areas from time to time. During 11–14 January 1939, for example, a severe heat wave affected south eastern Australia: Adelaide had a record of 47.6°C on the 12th, Melbourne a record of 45.6°C on the 13th and Sydney a record of 45.3°C on the 14th.

The Kimberley district of Western Australia is the consistently hottest part of Australia in terms of annual average maximum temperature. Wyndham, for example, has an annual average maximum of 35.6°C.

Frost

Frost can cause serious losses in agricultural crops, and numerous climatic studies have been made in Australia relating to specific crops cultivated in local areas.

Under calm conditions, overnight temperatures at ground level are often as much as 5°C lower than those measured in the instrument screen (base height 1.1 metre) and differences of 10°C have been recorded. Only a small number of stations measure minima at ground level, the lowest recordings being −15.1°C at Canberra and −11.0°C at Stanthorpe (Queensland). Lower readings may be recorded in alpine areas.

Frost frequency depends on location and orography, and even on minor variations in the contour of the land. The parts of Australia which are most subject to frost are the eastern uplands from north-eastern Victoria to the western Darling Downs in southern Queensland. Most stations in this region experience more than ten nights a month with readings of 0°C (or under) for three to five months of the year. On Tasmania's Central Plateau similar conditions occur for three to six months of the year. Frosts may occur within a few miles of the coasts except in the Northern Territory and most of the north Queensland coasts.

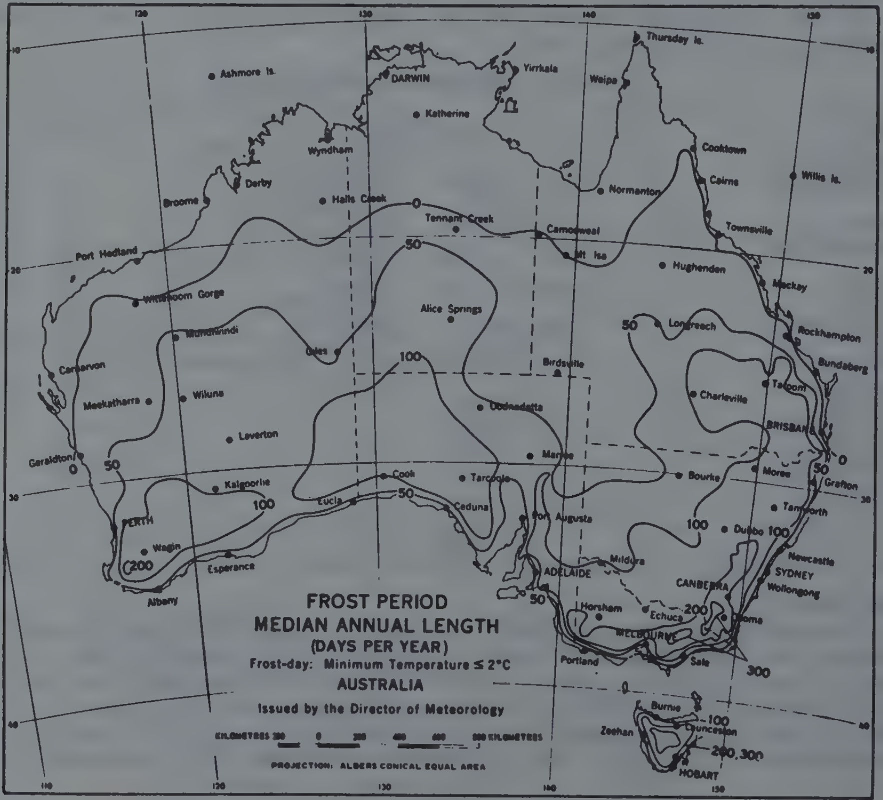

FROST PERIOD
MEDIAN ANNUAL LENGTH
(DAYS PER YEAR)
Frost-day: Minimum Temperature ≤ 2°C
AUSTRALIA
Issued by the Director of Meteorology
KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA
Ashmore Is.
DARWIN
Yirrkala
Thursday Is.
Weipa
Katherine
Wyndham
Derby
Broome
Halls Creek
Tennant Creek
Camooweal
Mt Isa
Normanton
Cooktown
Cairns
Willis Is.
Townsville
Hughenden
Mackay
Port Hedland
Wittenoom Gorge
Mundiwindi
Giles
Alice Springs
Longreach
Rockhampton
Bundaberg
Carnarvon
Meekatharra
Wiluna
Birdsville
Oodnadatta
Charleville
Taroom
BRISBANE
Laverton
Geraldton
Marree
Moree
Grafton
Kalgoorlie
Cook
Tarcoola
Bourke
Eucla
Ceduna
Port Augusta
Tamworth
PERTH
Wagin
Esperance
Albany
Dubbo
Mildura
ADELAIDE
Newcastle
SYDNEY
Wollongong
CANBERRA
Horsham
Echuca
Cooma
MELBOURNE
Portland
Sale
Burnie
Zeehan
Launceston
HOBART
0
50
100
200
300
10
20
30
40
110
120
130
140
150

FIGURE 14

Regions in which frosts may occur at any time of the year comprise most of Tasmania, large areas of the tablelands of New South Wales, much of inland Victoria, particularly the north-east, and a small part of the extreme south-west of Western Australia. Over most of the interior of the continent, and on the highlands of Queensland as far north as the Atherton Plateau, frosts commence in April and end in September. Minimum temperatures below 0°C are experienced in most of the subtropical interior in June and July.

The length of the frost period for the year is taken as the number of days between the first and last recording of an air temperature of 2°C or less. The median duration of the frost period in days per year is shown in Figure 14.

The median frost period over the continent varies from over 200 days per year in the south-eastern uplands areas south of the Hunter Valley to zero days in northern Australia. In the southern regions of the continent, the annual frost period generally decreases from about 100 days inland to below 50 days towards the coast. However, there are appreciable spatial variations depending mainly on local orography. In Tasmania the frost period exceeds 300 days on the uplands and decreases to 100 days near the coast.

More strictly, a frost is taken as corresponding to a minimum screen temperature of 2.2°C or less. A light frost is said to occur when the screen minimum temperature is greater than 0°C but less than or equal to 2.2°C. A heavy frost corresponds to a minimum temperature of 0°C or less.

The table below includes the average annual frequency of minima of 2.2°C or less for a wide selection of stations, particularly those prone to frosts. These data show the high spatial variability of frost frequency across Australia. The south-eastern alpine areas, as represented by Kiandra (elevation 1,400 metres), have a frequency exceeding 200. At Kalgoorlie the average annual frequency is 20.4 days, at Alice Springs 32.7, Charleville 32.3, Canberra 101.1 and Essendon Airport (Melbourne) 14.2.

FROST FREQUENCY

Average annual number of frosty nights (screen minimum <=2.2°C) and heavy frosts (<=0°C)

Station	*Period of record*	*Altitude (metres)*	*Average number of frosty nights <=2.2°C*	*Average number of heavy frosts <=0°C*
Adelaide Airport	1956–85	6.0	6.2	0.9
Alice Springs	1942–85	545.0	32.7	11.9
Ballan	1957–68	442.0	62.3	20.5
Birdsville.	1957–83	43.0	4.7	0.4
Brisbane Airport	1950–85	6.0	0.2	0.0
Canberra Airport	1940–85	571.0	101.1	63.6
Ceduna Airport.	1943–85	24.0	18.4	4.2
Charleville Airport.	1943–85	306.0	32.3	12.9
Essendon Airport (Melbourne) . . .	1940–70	86.0	14.2	2.6
Hobart	1949–85	55.2	17.1	1.7
Kalgoorlie Airport	1943–84	360.0	20.4	4.6
Kiandra	1957–68	1,395.4	228.3	176.7
Mount Gambier Airport	1943–85	63.0	26.0	6.9
Perth Airport	1945–86	20.0	2.8	0.1
Walgett	1957–84	131.0	23.3	5.7

NOTE: '< =' denoted less than or equal to

The regions of mainland Australia most prone to heavy frosts are the eastern uplands and adjacent areas extending from Victoria through New South Wales to south-eastern Queensland. Stations above 1,000 metres in altitude in the southern parts of these uplands have more than 100 heavy frosts annually, and in the upland areas below 1,000 metres the annual frequency ranges from 100 to about 20. Over the remainder of southern Queensland, New South Wales and Victoria, although there are great spatial variations, the average annual frequency of heavy frosts typically ranges from about 20 inland to 10 towards the coast.

In Tasmania, uplands above 1,000 metres have more than 100 heavy frosts annually and, in neighbouring areas, the frequency is about 100 decreasing to 20 towards the coasts. Even some coastal stations have a relatively high frequency (Swansea, for example, has 15.7).

The southern half of Western Australia, the whole of South Australia, and the Alice Springs district of the Northern Territory experience heavy frosts. Differences in annual frequencies between places are great but in general the frequency is about 10 inland, decreasing towards the coasts. Some places average more than 20 heavy frosts annually, notably Wandering, Western Australia (21.5) and Yongala, South Australia (41.8). At Alice Springs the annual average frequency is 11.9.

Humidity

Australia is a dry continent in terms of the water vapour content or humidity of the air and this element may be compared with evaporation to which it is related. Humidity is measured at Bureau of Meteorology observational stations by a pair of dry and wet bulb thermometers mounted in a standard instrument screen. These measurements enable moisture content to be expressed by a number of parameters, the most commonly known being relative humidity.

Relative humidity at a given temperature is the ratio (expressed as a percentage) of actual vapour pressure to the saturated vapour pressure at that temperature. As a single measure of human discomfort, relative humidity is of limited value because it must be related to the temperature at the time.

Since the temperature at 9 a.m. approximates the mean temperature for the day (24 hours), the relative humidity at 9 a.m. may be taken as an estimate of the mean relative humidity for the day. Relative humidity at 3 p.m. occurs around the warmest part of the day on the average and is representative of the lowest daily values. Relative humidity on the average is at a maximum in the early morning when air temperature is minimal.

The main features of the relative humidity pattern are:

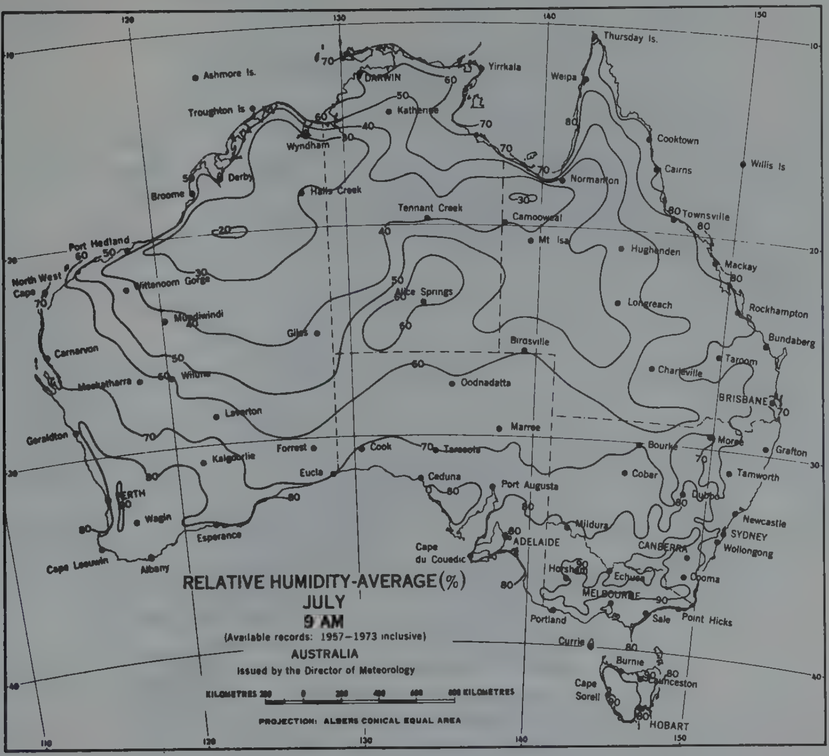
- over the interior of the continent there is a marked dryness during most of the year, notably towards the northern coats in the dry season (May–October);
- the coastal fringes are comparatively moist, although this is less evident along the north-west coast of Western Australia where continental effects are marked;
- in northern Australia, the highest values occur during the summer wet season (December–February) and the lowest during the winter dry season (June–August);
- in most of southern Australia the highest values are experienced in the winter rainy season (June–August) and the lowest in summer (December–February).

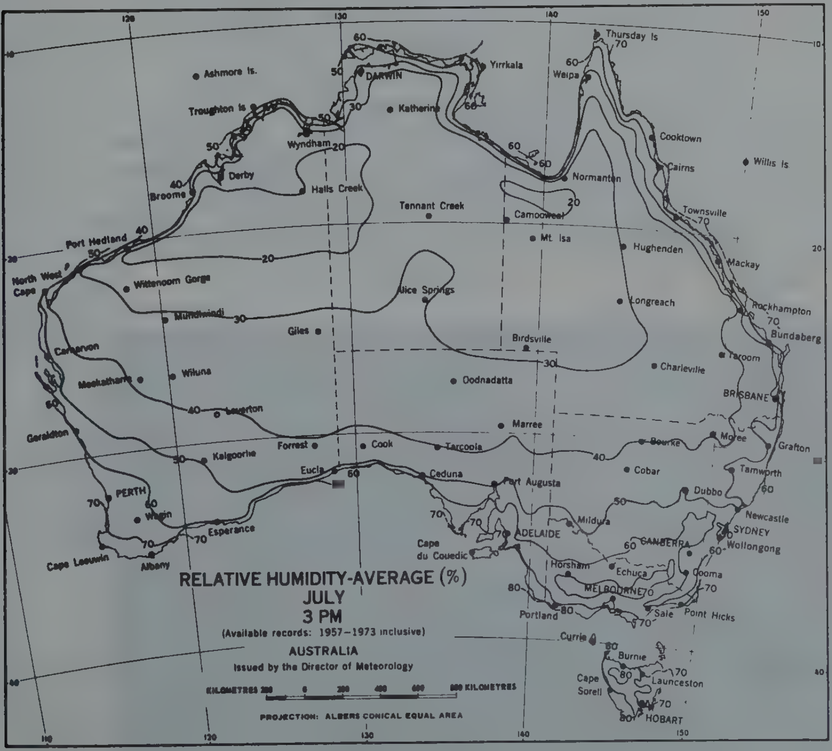
The table below contains average relative humidity at 9 a.m. for the year and for each month for selected stations. Humidity values for the capital cities are contained in the capital city detailed statistical tables found further on. Average annual figures on the table range from 35 per cent at Mundiwindi, to 80 per cent at Thursday Island illustrating the range of average relative humidity over Australia. Adelaide has the lowest value for a capital city with an annual average of 58 per cent, compared with Melbourne (69 per cent) and Darwin (73 per cent).

AVERAGE RELATIVE HUMIDITY AT 9 A.M.

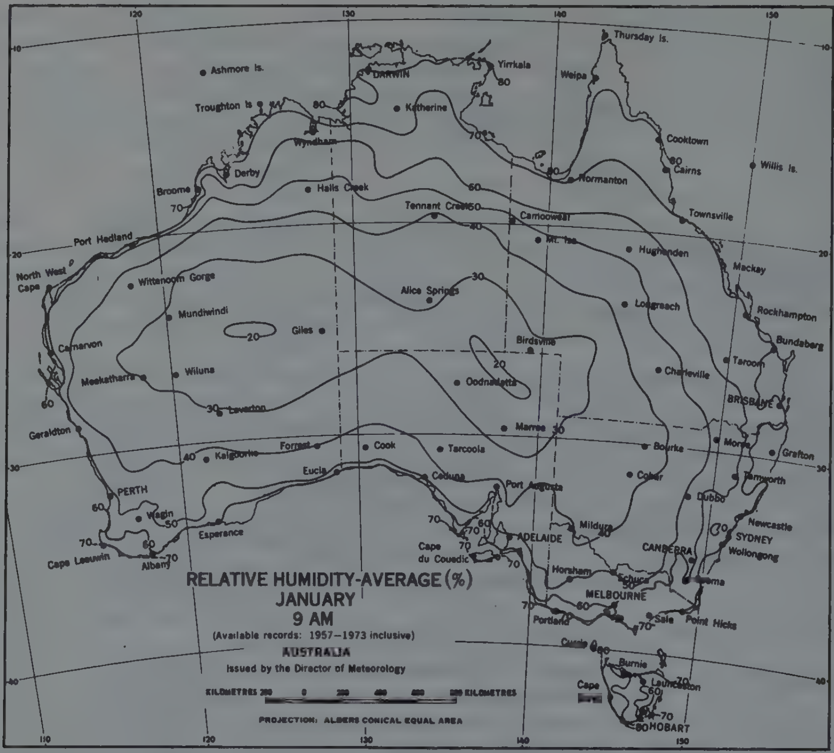
(per cent)

Station	*Period of record*	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*	*Year*
Alice Springs . .	1941–86	34	39	40	46	57	65	59	47	35	31	29	29	43
Armidale . . .	1907–85	63	69	71	73	78	80	77	71	62	57	56	57	68
Broome	1939–86	71	74	69	56	49	49	47	45	48	53	58	64	57
Carnarvon . . .	1945–86	58	58	57	57	60	69	69	64	54	51	54	57	59
Ceduna	1939–86	52	59	61	66	76	81	80	75	64	54	51	51	64
Charleville . . .	1942–86	47	53	53	53	63	71	66	56	44	41	37	39	52
Cloncurry . . .	1939–75	52	60	52	45	47	51	45	37	31	31	31	40	44
Esperance . . .	1969–86	58	61	64	70	74	77	77	75	68	61	60	57	67
Halls Creek . .	1944–86	51	55	44	34	35	34	31	25	22	25	30	39	35
Kalgoorlie . . .	1938–53	43	48	51	57	63	68	72	61	48	45	40	39	53
Katanning . . .	1957–86	57	64	67	76	83	88	89	87	81	69	60	56	73
Kiandra	1907–74	61	66	72	79	84	89	90	87	76	67	62	62	75
Marble Bar . . .	1937–86	44	47	40	34	39	42	39	33	27	26	26	33	36
Mildura	1946–86	50	56	59	70	82	88	86	79	67	57	52	48	66
Mundiwindi . .	1938–81	31	35	34	37	44	53	49	39	28	23	22	23	35
Thursday Island	1950–86	84	86	85	82	82	81	80	78	75	73	73	78	80
Townsville . . .	1940–86	72	75	74	69	68	66	67	64	60	61	63	66	67


RELATIVE HUMIDITY-AVERAGE (%)
JULY
9 AM
(Available records: 1957–1973 inclusive)
AUSTRALIA
Issued by the Director of Meteorology
KILOMETRES 200 0 200 400 600 800 KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA
120
130
140
150
110
10
20
30
40
Thursday Is.
Ashmore Is.
DARWIN
Yirrkala
Weipa
Troughton Is
Katherine
Wyndham
Cooktown
Cairns
Willis Is
Derby
Broome
Halls Creek
Normanton
Tennant Creek
Camooweal
Townsville
Mt Isa
Port Hedland
Hughenden
North West Cape
Wittenoom Gorge
Mackay
Alice Springs
Longreach
Rockhampton
Mundiwindi
Giles
Bundaberg
Birdsville
Carnarvon
Taroom
Charleville
Meekatharra
Wiluna
Oodnadatta
BRISBANE
Laverton
Marree
Geraldton
Bourke
Moree
Grafton
Forrest
Cook
Tarcoola
Kalgoorlie
Eucla
Ceduna
Cobar
Tamworth
Port Augusta
PERTH
Dubbo
Wagin
Newcastle
SYDNEY
Mildura
Esperance
Cape du Couedic
ADELAIDE
CANBERRA
Wollongong
Cape Leeuwin
Albany
Horsham
Echuca
Cooma
MELBOURNE
Portland
Sale
Point Hicks
Currie
Burnie
Launceston
Cape Sorell
HOBART
20
30
40
50
60
70
80
90


RELATIVE HUMIDITY-AVERAGE (%)
JULY
3 PM
(Available records: 1957–1973 inclusive)
AUSTRALIA
Issued by the Director of Meteorology
KILOMETRES 200 0 200 400 600 800 KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA
120
130
140
150
110
10
20
30
40
Thursday Is
Ashmore Is.
DARWIN
Yirrkala
Weipa
Troughton Is
Katherine
Wyndham
Cooktown
Cairns
Willis Is
Derby
Broome
Halls Creek
Normanton
Tennant Creek
Camooweal
Townsville
Mt. Isa
Port Hedland
Hughenden
North West Cape
Wittenoom Gorge
Mackay
Alice Springs
Longreach
Rockhampton
Mundiwindi
Giles
Bundaberg
Birdsville
Carnarvon
Taroom
Charleville
Meekatharra
Wiluna
Oodnadatta
BRISBANE
Laverton
Marree
Geraldton
Bourke
Moree
Grafton
Forrest
Cook
Tarcoola
Kalgoorlie
Eucla
Ceduna
Cobar
Tamworth
Port Augusta
PERTH
Dubbo
Wagin
Newcastle
SYDNEY
Mildura
Esperance
Cape du Couedic
ADELAIDE
CANBERRA
Wollongong
Cape Leeuwin
Albany
Horsham
Echuca
Cooma
MELBOURNE
Portland
Sale
Point Hicks
Currie
Burnie
Launceston
Cape Sorell
HOBART
20
30
40
50
60
70
80

FIGURES 15 AND 16


RELATIVE HUMIDITY-AVERAGE (%)
JANUARY
9 AM
(Available records: 1957–1973 inclusive)
AUSTRALIA
Issued by the Director of Meteorology
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PROJECTION: ALBERS CONICAL EQUAL AREA
Thursday Is.
Ashmore Is.
DARWIN
Yirrkala
Weipa
Troughton Is
Katherine
Wyndham
Cooktown
Cairns
Willis Is.
Derby
Normanton
Broome
Halls Creek
Townsville
Tennant Creek
Camooweal
Port Hedland
Mt. Isa
Hughenden
North West Cape
Wittenoom Gorge
Mackay
Alice Springs
Longreach
Rockhampton
Mundiwindi
Giles
Bundaberg
Carnarvon
Birdsville
Taroom
Meekatharra
Wiluna
Charleville
Oodnadatta
BRISBANE
Laverton
Marree
Geraldton
Forrest
Cook
Tarcoola
Bourke
Moree
Grafton
Kalgoorlie
Eucla
Ceduna
Cobar
Tamworth
PERTH
Port Augusta
Dubbo
Wagin
Mildura
Newcastle
Esperance
ADELAIDE
SYDNEY
Cape Leeuwin
Albany
Cape du Couedic
CANBERRA
Wollongong
Horsham
Echuca
Cooma
MELBOURNE
Portland
Sale
Point Hicks
Currie
Burnie
Cape Sorell
Launceston
HOBART
80
70
60
50
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20
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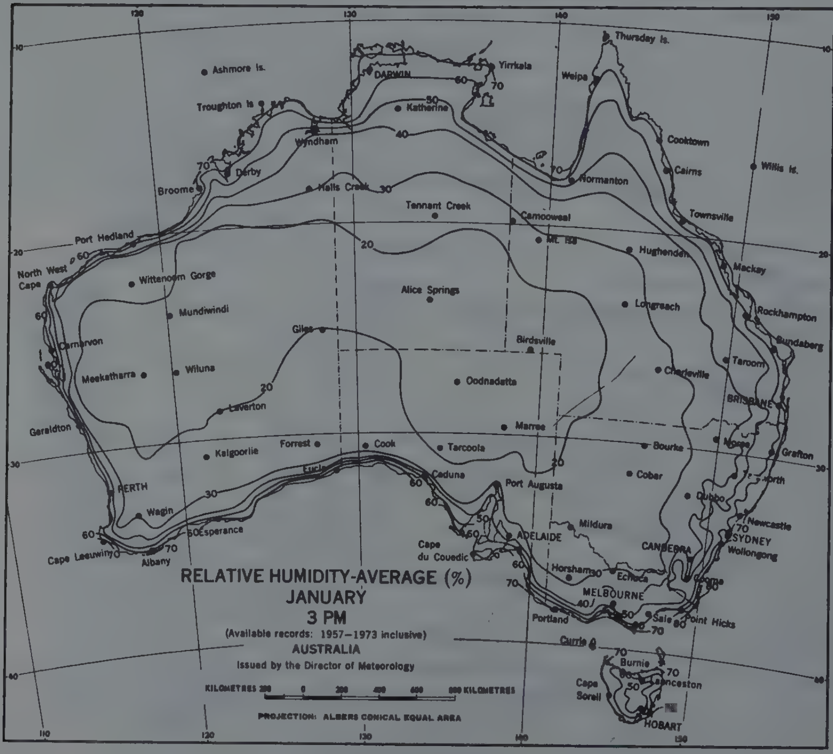
120
130
140
150
10
20
30
40


RELATIVE HUMIDITY-AVERAGE (%)
JANUARY
3 PM
(Available records: 1957–1973 inclusive)
AUSTRALIA
Issued by the Director of Meteorology
KILOMETRES 200 0 200 400 600 800 KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA
Thursday Is.
Ashmore Is.
DARWIN
Yirrkala
Weipa
Troughton Is
Katherine
Wyndham
Cooktown
Cairns
Willis Is.
Derby
Normanton
Broome
Halls Creek
Townsville
Tennant Creek
Camooweal
Port Hedland
Mt. Isa
Hughenden
North West Cape
Wittenoom Gorge
Mackay
Alice Springs
Longreach
Rockhampton
Mundiwindi
Giles
Bundaberg
Carnarvon
Birdsville
Taroom
Meekatharra
Wiluna
Charleville
Oodnadatta
BRISBANE
Laverton
Marree
Geraldton
Forrest
Cook
Tarcoola
Bourke
Moree
Grafton
Kalgoorlie
Eucla
Ceduna
Cobar
Tamworth
PERTH
Port Augusta
Dubbo
Wagin
Mildura
Newcastle
Esperance
ADELAIDE
SYDNEY
Cape Leeuwin
Albany
Cape du Couedic
CANBERRA
Wollongong
Horsham
Echuca
Cooma
MELBOURNE
Portland
Sale
Point Hicks
Currie
Burnie
Cape Sorell
Launceston
HOBART
70
60
50
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120
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30
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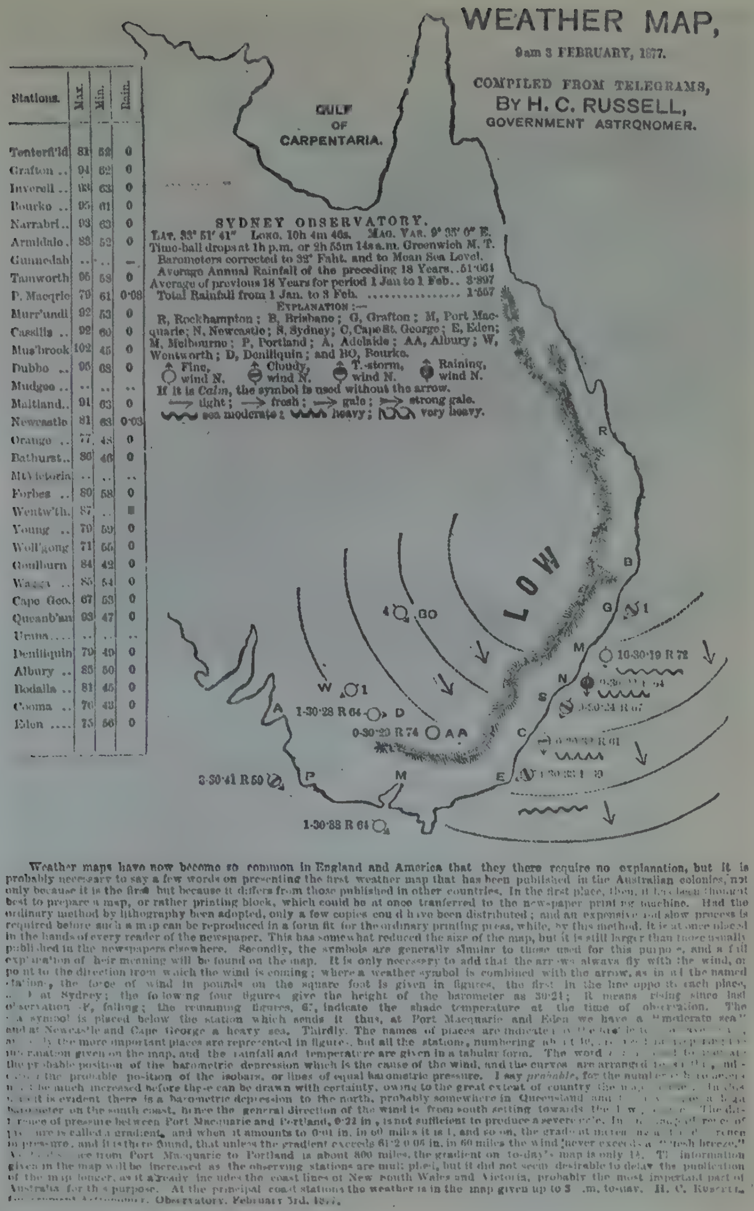
FIGURES 17 AND 18



WEATHER MAP,

9am 3 FEBRUARY, 1877.

COMPILED FROM TELEGRAMS,
BY H. C. RUSSELL,
GOVERNMENT ASTRONOMER.

Stations.	Max.	Min.	Rain.
Tenterfi'ld	81	52	0
Grafton ..	94	62	0
Inverell ..	[illegible]	63	0
Bourke ..	95	61	0
Narrabri ..	93	63	0
Armidale .	83	52	0
Gunnedah	..	..	—
Tamworth	96	58	0
P. Macqrie	79	61	0·08
Murr'undi	92	53	0
Cassilis ..	92	60	0
Mus'brook	102	45	0
Dubbo ..	96	68	0
Mudgee ..	..	..	..
Maitland..	91	63	0
Newcastle	81	63	0·03
Orange ..	77	48	0
Bathurst..	80	46	0
MtVictoria	..	..	..
Forbes ..	80	58	0
Wentw'th.	87	..	■
Young ..	79	59	0
Woll'gong	71	66	0
Goulburn	84	42	0
Wagga ..	85	64	0
Cape Geo.	67	53	0
Queanb'an	93	47	0
Urana....	..	..	..
Deniliquin	79	40	0
Albury ..	85	50	0
Bodalla ..	81	45	0
Cooma ..	76	43	0
Eden	75	56	0

SYDNEY OBSERVATORY.

LAT. 33° 51′ 41″ LONG. 10h 4m 46s. MAG. VAR. 9° 35′ 0″ E.
Time-ball drops at 1h p.m. or 2h 55m 14s a.m. Greenwich M. T.
Barometers corrected to 32° Faht. and to Mean Sea Level.
Average Annual Rainfall of the preceding 18 Years..51·064
Average of previous 18 Years for period 1 Jan to 1 Feb.. 3·897
Total Rainfall from 1 Jan. to 3 Feb. .... 1·557

EXPLANATION :—

R, Rockhampton ; B, Brisbane ; G, Grafton ; M, Port Macquarie ; N, Newcastle ; S, Sydney ; C, Cape St. George ; E, Eden ; M, Melbourne ; P, Portland ; A, Adelaide ; AA, Albury ; W, Wentworth ; D, Deniliquin ; and BO, Bourke.

Fine, wind N. Cloudy, wind N. T.-storm, wind N. Raining, wind N.

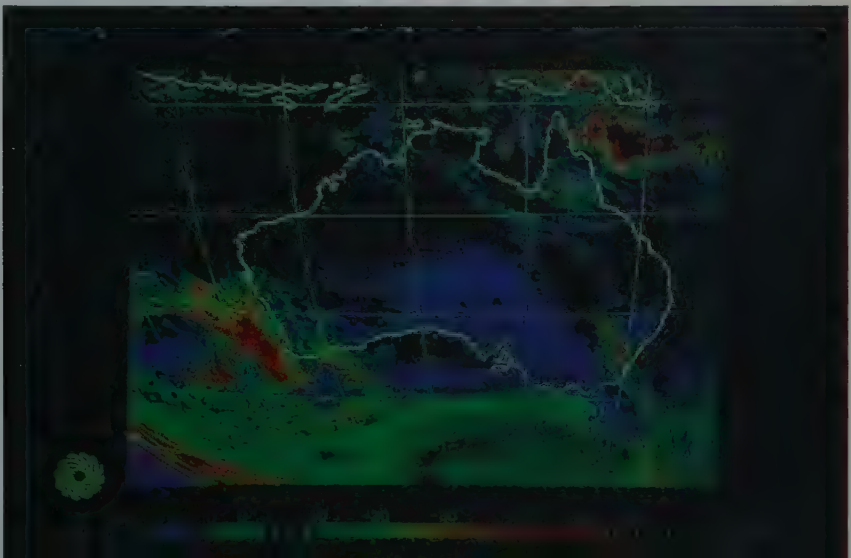
If it is *Calm*, the symbol is used without the arrow.

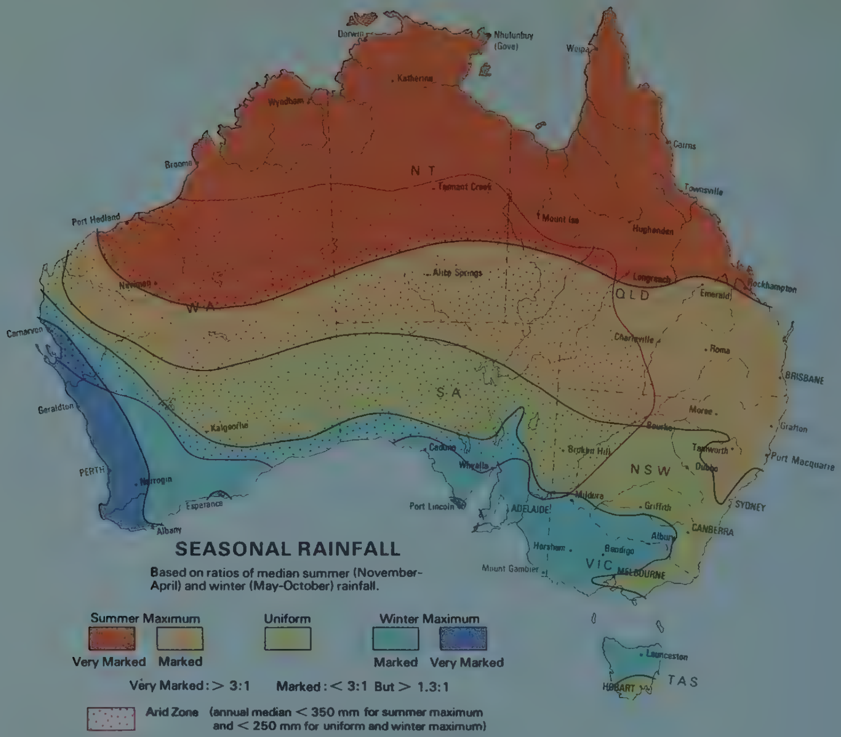
→ light ; → fresh ; → gale ; → strong gale.

〰 sea moderate ; 〰 heavy ; 〰 very heavy.

Weather maps have now become so common in England and America that they there require no explanation, but it is probably necessary to say a few words on presenting the first weather map that has been published in the Australian colonies, not only because it is the first but because it differs from those published in other countries. In the first place, then, it has been thought best to prepare a map, or rather printing block, which could be at once tranferred to the newspaper printing machine. Had the ordinary method by lithography been adopted, only a few copies could have been distributed ; and an expensive and slow process is required before such a map can be reproduced in a form fit for the ordinary printing press, while, by this method, it is at once placed in the hands of every reader of the newspaper. This has somewhat reduced the size of the map, but it is still larger than those usually published in the newspapers elsewhere. Secondly, the symbols are generally similar to those used for this purpose, and a full explanation of their meaning will be found on the map. It is only necessary to add that the arrows always fly with the wind, or point to the direction from which the wind is coming ; where a weather symbol is combined with the arrow, as in all the named stations, the force of wind in pounds on the square foot is given in figures, the first in the line opposite each place, [illegible] at Sydney ; the following four figures give the height of the barometer as 30·21 ; R means rising since last observation, F, falling ; the remaining figures, 67, indicate the shade temperature at the time of observation. The [illegible] symbol is placed below the station which sends it thus, at Port Macquarie and Eden we have a "moderate sea" and at Newcastle and Cape George a heavy sea. Thirdly. The names of places are indicated [illegible], [illegible] the more important places are represented in figures, but all the stations, numbering [illegible] information given on the map, and the rainfall and temperature are given in a tabular form. The word [illegible] the probable position of the barometric depression which is the cause of the wind, and the curves are arranged [illegible] the probable position of the isobars, or lines of equal barometric pressure. I say *probable*, for the number [illegible] be much increased before these can be drawn with certainty, owing to the great extent of country [illegible] it is evident there is a barometric depression to the north, probably somewhere in Queensland and [illegible] barometer on the south coast, hence the general direction of the wind is from south setting towards the low [illegible]. The difference of pressure between Port Macquarie and Portland, 0·22 in., is not sufficient to produce a severe gale. In [illegible] pressure is called a gradient, and when it amounts to 0·01 in. in 60 miles it is 1, and so on, the gradient [illegible] in pressure, and it is there found, that unless the gradient exceeds 6 1·2 0·06 in. in 60 miles the wind never exceeds a "fresh breeze." [illegible] from Port Macquarie to Portland is about 800 miles, the gradient on to-day's map is only 1½. The information given in the map will be increased as the observing stations are multiplied, but it did not seem desirable to delay the publication of the map longer, as it already includes the coast lines of New South Wales and Victoria, probably the most important part of Australia for this purpose. At the principal coast stations the weather is in the map given up to 9 a.m. to-day. H. C. RUSSELL, Government Astronomer. Observatory, February 3rd, 1877.

hotographs— Bureau of Meteorology

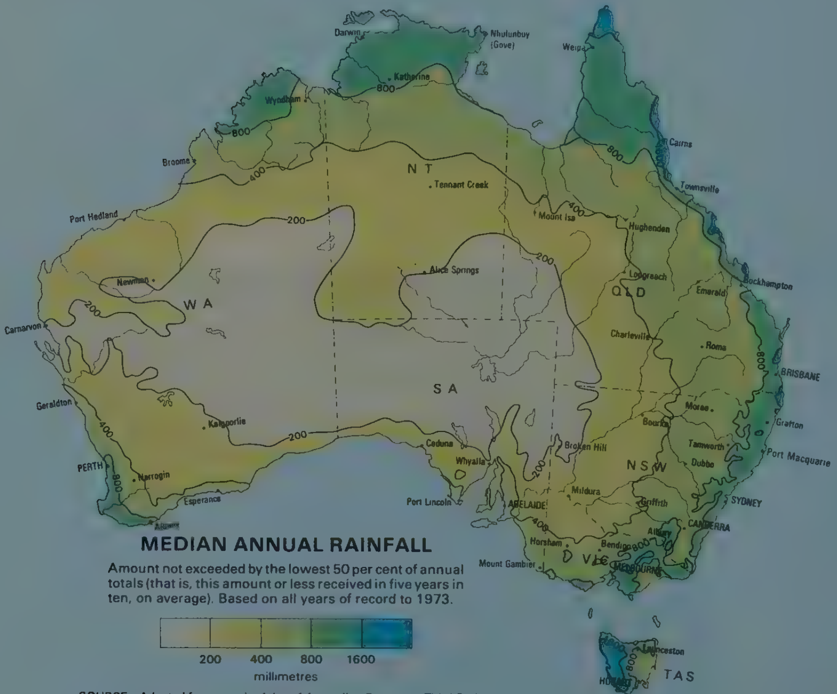



Darwin
Nhulunbuy (Gove)
Weipa
Katherine
Wyndham
Cairns
Broome
N T
Tennant Creek
Townsville
Port Hedland
Mount Isa
Hughenden
Alice Springs
Longreach
Rockhampton
Newman
Q L D
Emerald
W A
Carnarvon
Charleville
Roma
BRISBANE
S A
Geraldton
Moree
Kalgoorlie
Bourke
Grafton
Ceduna
Broken Hill
Tamworth
Port Macquarie
Whyalla
N S W
Dubbo
PERTH
Narrogin
Mildura
Esperance
Port Lincoln
ADELAIDE
Griffith
SYDNEY
Albany
CANBERRA
Albury
Horsham
Bendigo
V I C
Mount Gambier
MELBOURNE
Launceston
HOBART
T A S
Summer Maximum
Uniform
Winter Maximum
Very Marked
Marked
Marked
Very Marked
Very Marked: > 3:1
Marked: < 3:1 But > 1.3:1
Arid Zone (annual median < 350 mm for summer maximum and < 250 mm for uniform and winter maximum)

SEASONAL RAINFALL

Based on ratios of median summer (November-April) and winter (May-October) rainfall.

SOURCE: Adapted from map in Bureau of Meteorology, *Climatic Atlas of Australia*, Map Set 5.

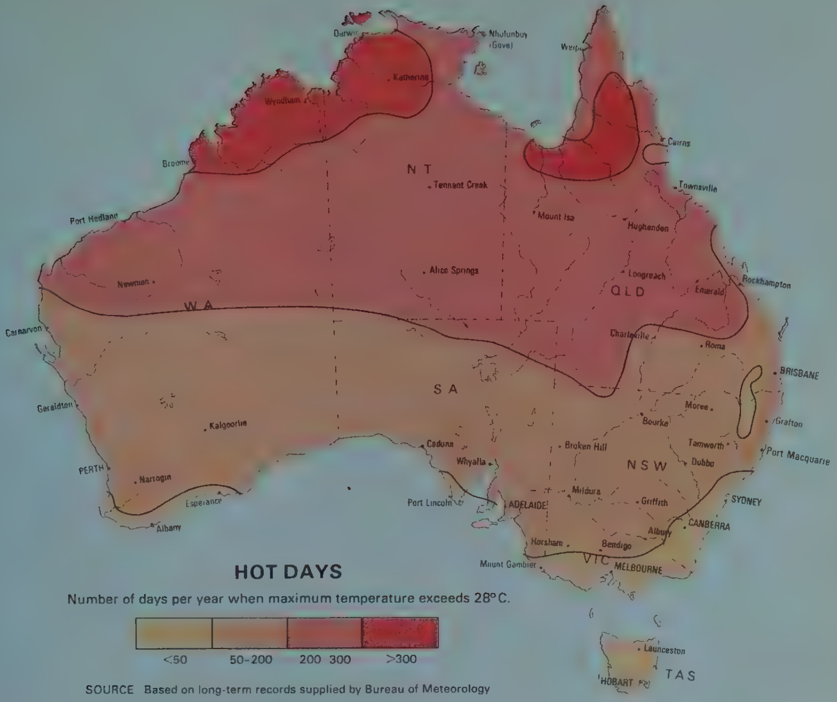

Darwin
Nhulunbuy (Gove)
Weipa
Katherine
800
Wyndham
800
Cairns
Broome
400
N T
Tennant Creek
800
Townsville
Port Hedland
Mount Isa
400
Hughenden
200
200
Alice Springs
Longreach
Newman
W A
Q L D
Emerald
Rockhampton
200
Carnarvon
Charleville
Roma
800
BRISBANE
S A
Geraldton
Moree
400
Kalgoorlie
Bourke
Grafton
200
Ceduna
Broken Hill
Tamworth
Port Macquarie
Whyalla
N S W
Dubbo
PERTH
Narrogin
800
200
Mildura
Esperance
Port Lincoln
ADELAIDE
400
Griffith
SYDNEY
Albany
CANBERRA
Albury
Horsham
Bendigo
800
V I C
Mount Gambier
MELBOURNE
Launceston
800
HOBART
T A S
200
400
800
1600
millimetres

MEDIAN ANNUAL RAINFALL

Amount not exceeded by the lowest 50 per cent of annual totals (that is, this amount or less received in five years in ten, on average). Based on all years of record to 1973.

SOURCE: Adapted from map in *Atlas of Australian Resources*, Third Series, Volume 4 ('Climate'), Division of National Mapping, 1986.

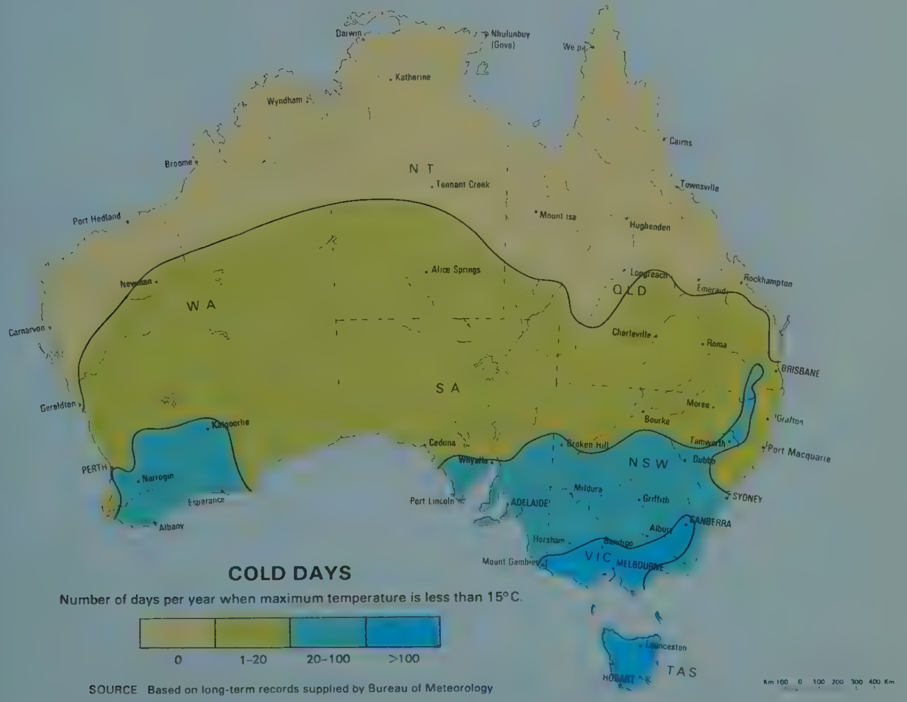
NMP 86/008.11


Darwin
Nhulunbuy (Gove)
Weipa
Katherine
Wyndham
Cairns
Broome
N T
Tennant Creek
Townsville
Mount Isa
Hughenden
Port Hedland
Alice Springs
Longreach
Rockhampton
Newman
W A
Q L D
Emerald
Carnarvon
Charleville
Roma
S A
BRISBANE
Geraldton
Moree
Bourke
Grafton
Kalgoorlie
Ceduna
Broken Hill
Tamworth
Port Macquarie
Whyalla
Dubbo
N S W
PERTH
Narrogin
Mildura
Griffith
SYDNEY
Esperance
Port Lincoln
ADELAIDE
CANBERRA
Albany
Albury
Horsham
Bendigo
VIC
MELBOURNE
Mount Gambier
Launceston
TAS
HOBART
<50
50-200
200 300
>300

HOT DAYS

Number of days per year when maximum temperature exceeds 28°C.

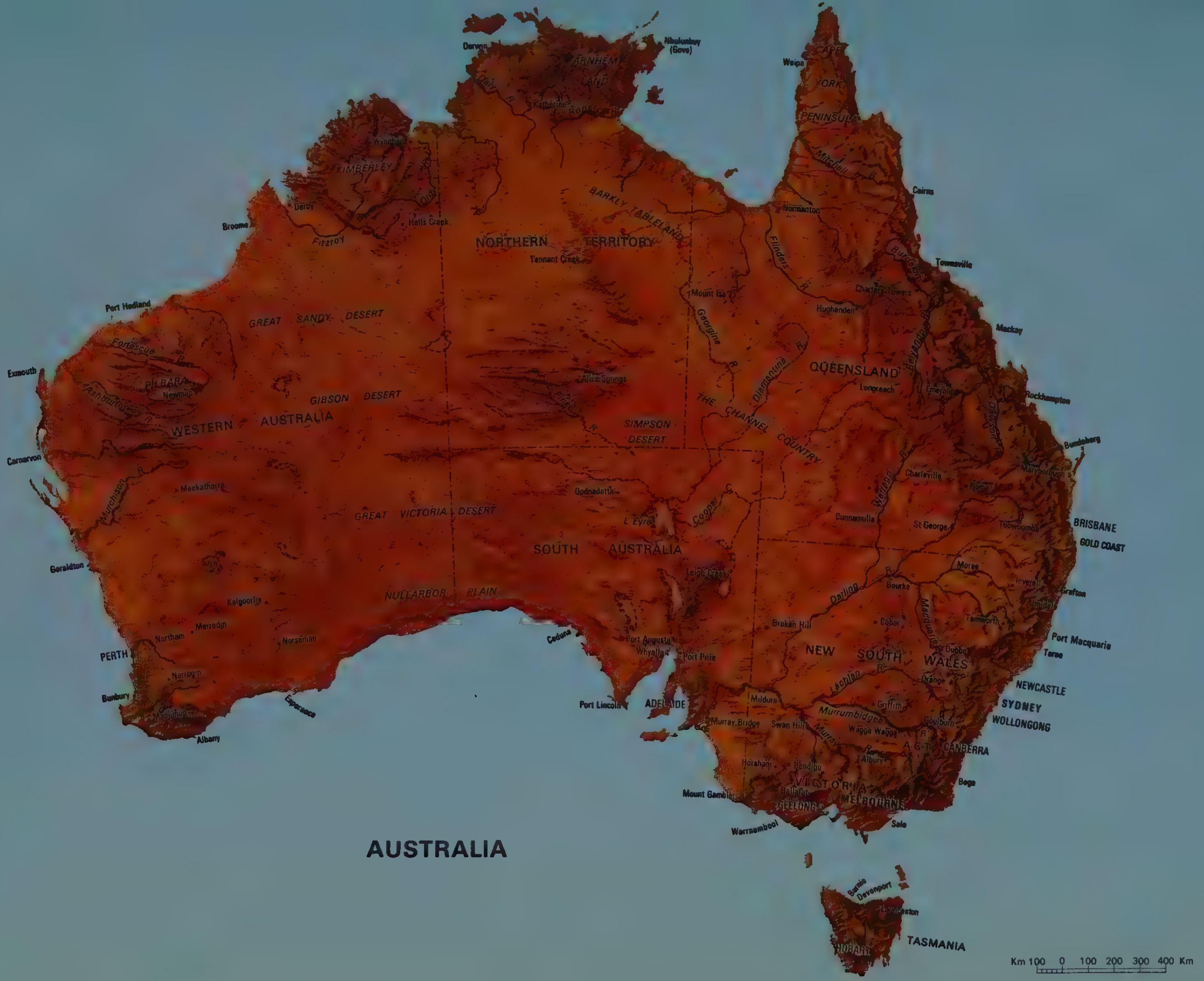
SOURCE Based on long-term records supplied by Bureau of Meteorology


Darwin
Nhulunbuy (Gove)
Weipa
Katherine
Wyndham
Cairns
Broome
N T
Tennant Creek
Townsville
Port Hedland
Mount Isa
Hughenden
Alice Springs
Longreach
Rockhampton
Newman
Q L D
Emerald
W A
Carnarvon
Charleville
Roma
BRISBANE
S A
Geraldton
Moree
Bourke
Grafton
Kalgoorlie
Ceduna
Broken Hill
Tamworth
Port Macquarie
Whyalla
N S W
Dubbo
PERTH
Narrogin
Mildura
Esperance
Port Lincoln
ADELAIDE
Griffith
SYDNEY
Albany
Albury
CANBERRA
Horsham
Bendigo
Mount Gambier
VIC
MELBOURNE
Launceston
TAS
HOBART
0
1-20
20-100
>100
Km 100 0 100 200 300 400 Km

COLD DAYS

Number of days per year when maximum temperature is less than 15°C.

SOURCE Based on long-term records supplied by Bureau of Meteorology


Darwin
ARNHEM
LAND
Nhulunbuy
(Gove)
Daly
R
Katherine
Roper
R
Weipa
CAPE
YORK
PENINSULA
Mitchell
R
Cairns
Wyndham
KIMBERLEY
Ord
R
Derby
Broome
Fitzroy
R
Halls Creek
NORTHERN
TERRITORY
Tennant Creek
BARKLY
TABLELAND
Normanton
Flinders
R
Burdekin
Townsville
Charters Towers
Hughenden
Mount Isa
Georgina
R
Mackay
Port Hedland
GREAT
SANDY
DESERT
Fortescue
R
Exmouth
PILBARA
Newman
Ashburton
R
GIBSON
DESERT
WESTERN
AUSTRALIA
Alice Springs
Finke
R
SIMPSON
DESERT
THE
CHANNEL
COUNTRY
Diamantina
R
QUEENSLAND
Longreach
Belyando
R
Emerald
Rockhampton
Dawson
R
Bundaberg
Maryborough
Carnarvon
Murchison
R
Meekatharra
Oodnadatta
Charleville
Warrego
R
Roma
GREAT
VICTORIA
DESERT
L Eyre
Cooper
C
Cunnamulla
St George
Toowoomba
BRISBANE
GOLD COAST
Geraldton
SOUTH
AUSTRALIA
Leigh Creek
Moree
Bourke
Darling
R
Inverell
Grafton
Armidale
Kalgoorlie
NULLARBOR
PLAIN
Broken Hill
Cobar
Tamworth
Macquarie
R
Merredin
Northam
Norseman
PERTH
Ceduna
Port Augusta
Whyalla
Port Pirie
NEW
SOUTH
WALES
Dubbo
Port Macquarie
Taree
Narrogin
Lachlan
R
Orange
NEWCASTLE
Bunbury
Manjimup
Esperance
Albany
Port Lincoln
ADELAIDE
Mildura
Griffith
SYDNEY
Murrumbidgee
Murray Bridge
Swan Hill
Wagga Wagga
Goulburn
WOLLONGONG
Murray
R
A.C.T.
CANBERRA
Albury
Horsham
Bendigo
Bega
VICTORIA
Ballarat
Mount Gambier
GEELONG
MELBOURNE
Sale
Warrnambool
Burnie
Devonport
Launceston
TASMANIA
HOBART
Km 100 0 100 200 300 400 Km

AUSTRALIA

NATMAP

NMP 86/008.11

Monthly averages shown in the table range from 22 per cent at Halls Creek in September and Mundiwindi in November, to 90 per cent at Kiandra in July. At Alice Springs monthly averages vary from 29 per cent in November and December to 65 per cent in the winter month of June when low temperatures have the effect of raising relative humidity over the interior. Broome varies from 45 per cent in August to 74 per cent in February, which is a marked seasonal change for a coastal station.

Relative humidity is dependent on temperature and if the water content of the air remains constant, relative humidity decreases with increasing temperature. For instance Perth, for January, has a mean 9 a.m. relative humidity of 50 per cent, but for 3 p.m., when the mean temperature is higher, the mean relative humidity is 41 per cent.

Relative humidity isopleths for January and July at 9 a.m. and 3 p.m. shown in Figures 15–18 are extracted from the *Climatic Atlas of Australia, Map Set 6, Relative Humidity,* 1978.

Global radiation

Global (short wave) radiation includes that radiation energy reaching the ground directly from the sun and that received indirectly from the sky, scattered downwards by clouds, dust particles, etc.

Figures 19 and 20 show the average global radiation for the months of January and July.

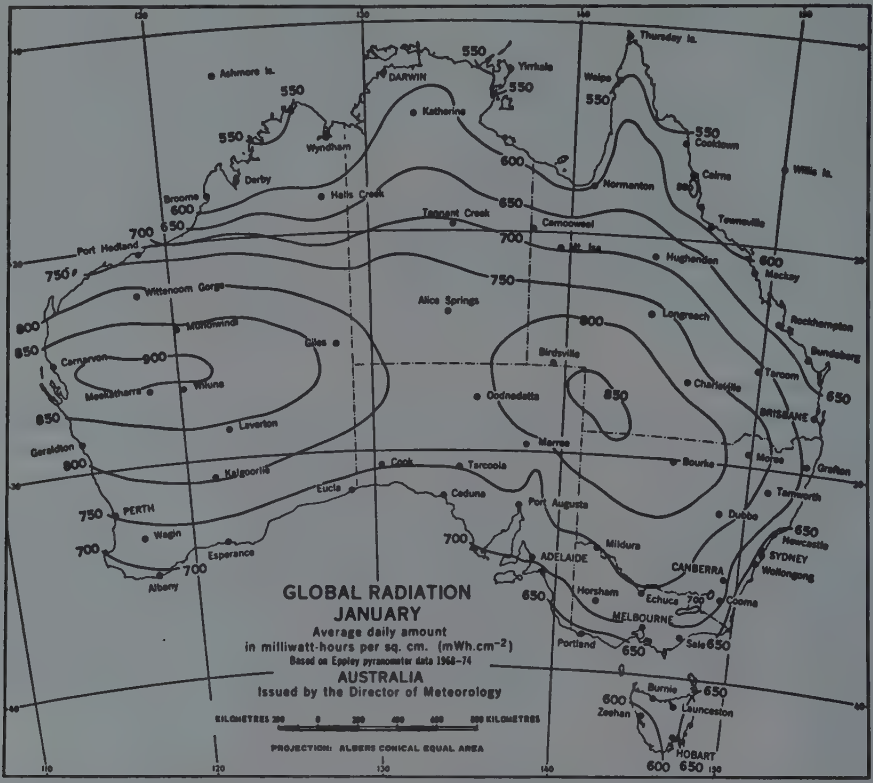
A high correlation exists between daily global radiation (Figures 19 and 20) and daily hours of sunshine (Figures 21 and 22). On the north-west coast around Port Hedland, where average daily global radiation is the highest for Australia (640 milliwatt hours), average daily sunshine is also highest, being approximately 10 hours. Sunshine is more dependent on variations in cloud coverage than is global radiation, since the latter includes diffuse radiation from the sky as well as direct radiation from the sun. An example is Darwin where, in the dry month of July, sunshine approaches twice that of the wet (cloudy) month of January but global radiation figures for the two months are comparable.

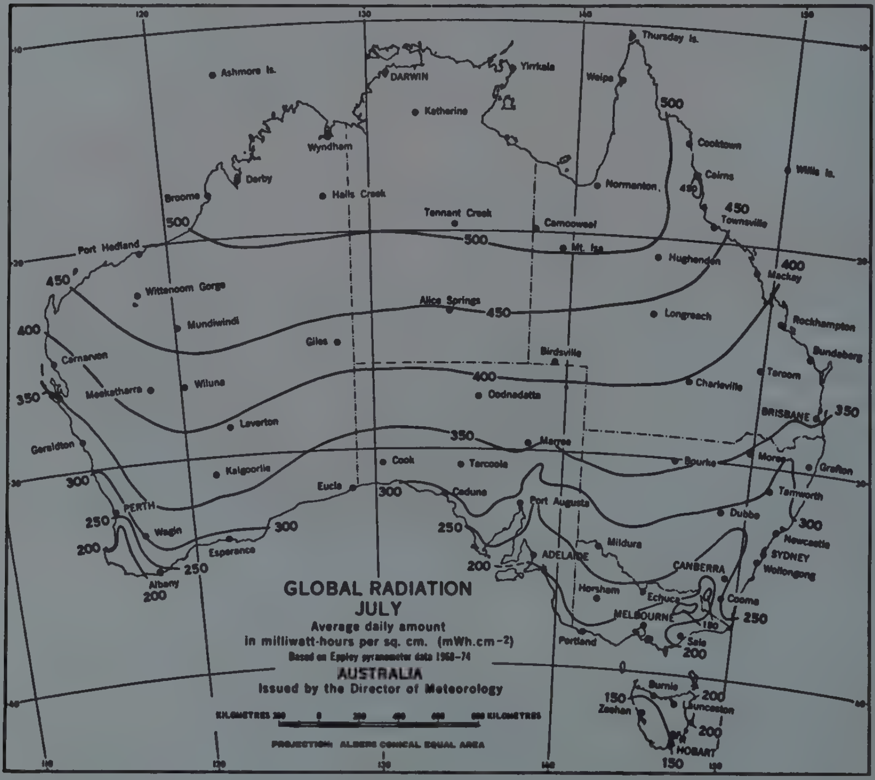
Sunshine

Sunshine as treated here refers to bright or direct sunshine. Australia receives relatively large amounts of sunshine although seasonal cloud formations have a notable effect on its spatial and temporal distribution. Cloud cover reduces both incoming and outgoing radiation and thus affects sunshine, air temperature and other climatic elements at the earth's surface. Sunshine amounts at Australian capitals are included in the climatic tables (*see* pages 236 to 247).

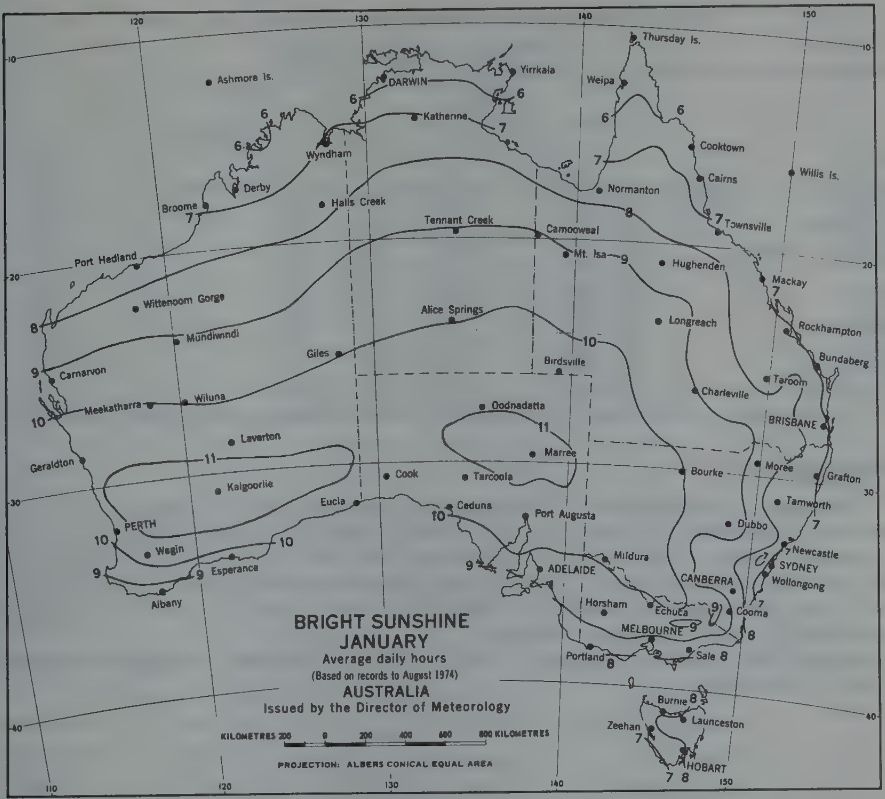
Average daily sunshine (hours) in January and July based on all available data to August 1974 is shown in Figures 21 and 22. Sunshine for April and October and annual amounts are included in the *Climatic Atlas, Map Set 4*. In areas where there is a sparsity of data, estimates of sunshine derived from cloud data are used. Most of the continent receives more than 3,000 hours of sunshine a year, or nearly 70 per cent of the total possible. In central Australia and the mid-west coast of Western Australia totals slightly in excess of 3,500 hours occur. Totals of less than 1,750 hours occur on the west coast and highlands of Tasmania; this amount is only 40 per cent of the total possible per year (about 4,380 hours).

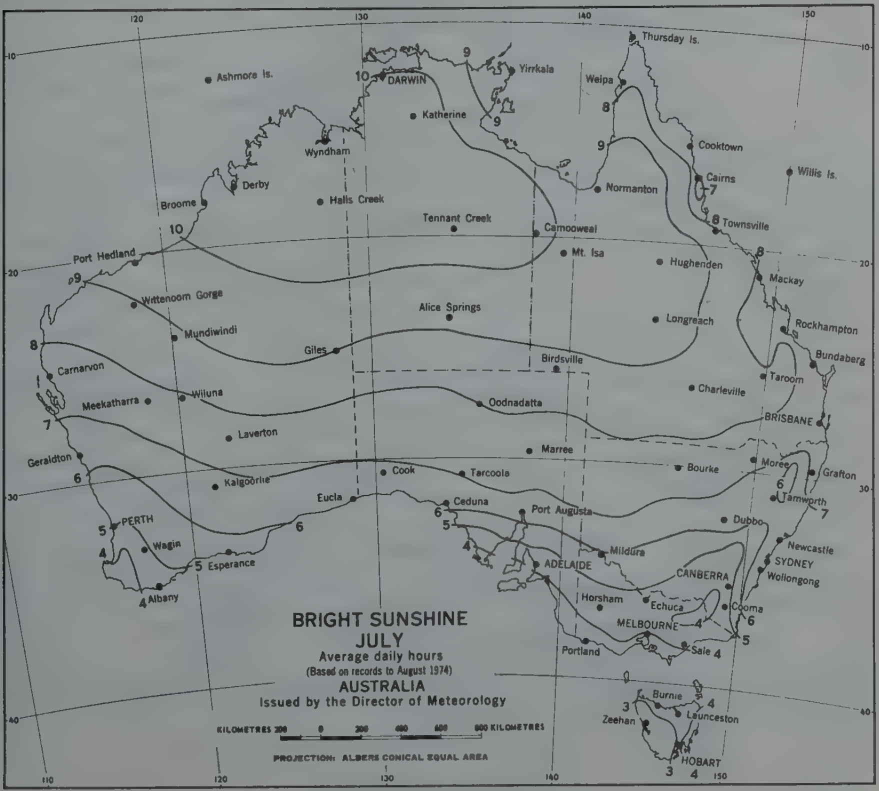
In southern Australia the duration of sunshine is greatest about December when the sun is at its highest elevation, and lowest in June when the sun is lowest. In northern Australia sunshine is generally greatest about August-October prior to the wet season, and least about January-March during the wet season. The table below gives the 20, 50 and 80 percentiles of daily bright sunshine for the months of January and July at selected stations. These values give an indication of the variability of daily sunshine hours. Perth, for example, has a high variability of daily sunshine hours in the wet month of July and a low variability in the dry month of January. Darwin has a low variability in the dry season month of July and a high variability in the wet season month of January.


GLOBAL RADIATION
JANUARY
Average daily amount
in milliwatt-hours per sq. cm. (mWh.cm-2)
Based on Eppley pyranometer data 1968–74
AUSTRALIA
Issued by the Director of Meteorology
KILOMETRES 200 0 200 400 600 800 KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA
550
600
650
700
750
800
850
900
Thursday Is.
Ashmore Is.
DARWIN
Yirrkala
Weipa
Katherine
Wyndham
Cooktown
Cairns
Willis Is.
Derby
Broome
Halls Creek
Normanton
Townsville
Tennant Creek
Camooweal
Port Hedland
Mt. Isa
Hughenden
Mackay
Wittenoom Gorge
Alice Springs
Longreach
Rockhampton
Mundiwindi
Giles
Birdsville
Bundaberg
Carnarvon
Wiluna
Meekatharra
Oodnadatta
Charleville
Taroom
BRISBANE
Laverton
Marree
Geraldton
Kalgoorlie
Cook
Tarcoola
Bourke
Moree
Grafton
Eucla
Ceduna
Tamworth
Port Augusta
Dubbo
PERTH
Wagin
Esperance
Mildura
Newcastle
SYDNEY
Wollongong
Albany
ADELAIDE
CANBERRA
Horsham
Echuca
Cooma
MELBOURNE
Portland
Sale
Burnie
Zeehan
Launceston
HOBART


GLOBAL RADIATION
JULY
Average daily amount
in milliwatt-hours per sq. cm. (mWh.cm-2)
Based on Eppley pyranometer data 1968–74
AUSTRALIA
Issued by the Director of Meteorology
KILOMETRES 200 0 200 400 600 800 KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA
150
200
250
300
350
400
450
500

FIGURES 19 AND 20


BRIGHT SUNSHINE
JANUARY
Average daily hours
(Based on records to August 1974)
AUSTRALIA
Issued by the Director of Meteorology
KILOMETRES 200 0 200 400 600 800 KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA
Thursday Is.
Ashmore Is.
DARWIN
Yirrkala
Weipa
Katherine
Wyndham
Derby
Broome
Halls Creek
Cooktown
Cairns
Willis Is.
Normanton
Townsville
Tennant Creek
Camooweal
Mt. Isa
Hughenden
Port Hedland
Mackay
Wittenoom Gorge
Rockhampton
Alice Springs
Longreach
Mundiwindi
Bundaberg
Giles
Birdsville
Carnarvon
Taroom
Charleville
Meekatharra
Wiluna
Oodnadatta
BRISBANE
Laverton
Marree
Moree
Geraldton
Bourke
Grafton
Kalgoorlie
Cook
Tarcoola
Tamworth
Eucla
Ceduna
Port Augusta
PERTH
Dubbo
Newcastle
Wagin
Mildura
SYDNEY
Esperance
ADELAIDE
CANBERRA
Wollongong
Albany
Horsham
Echuca
Cooma
MELBOURNE
Portland
Sale
Burnie
Launceston
Zeehan
HOBART
6
7
8
9
10
11
120
130
140
150
110
10
20
30
40


BRIGHT SUNSHINE
JULY
Average daily hours
(Based on records to August 1974)
AUSTRALIA
Issued by the Director of Meteorology
KILOMETRES 200 0 200 400 600 800 KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA
Thursday Is.
Ashmore Is.
DARWIN
Yirrkala
Weipa
Katherine
Wyndham
Derby
Cooktown
Cairns
Willis Is.
Broome
Halls Creek
Normanton
Tennant Creek
Camooweal
Townsville
Port Hedland
Mt. Isa
Hughenden
Mackay
Wittenoom Gorge
Alice Springs
Longreach
Rockhampton
Mundiwindi
Giles
Bundaberg
Birdsville
Carnarvon
Taroom
Charleville
Meekatharra
Wiluna
Oodnadatta
BRISBANE
Laverton
Marree
Geraldton
Moree
Bourke
Grafton
Kalgoorlie
Cook
Tarcoola
Eucla
Ceduna
Port Augusta
Tamworth
PERTH
Dubbo
Wagin
Mildura
Newcastle
Esperance
ADELAIDE
SYDNEY
Wollongong
Albany
CANBERRA
Horsham
Echuca
Cooma
MELBOURNE
Portland
Sale
Burnie
Launceston
Zeehan
HOBART
3
4
5
6
7
8
9
10
120
130
140
150
110
10
20
30
40

FIGURES 21 AND 22

BRIGHT SUNSHINE, VARIABILITY OF DAILY HOURS

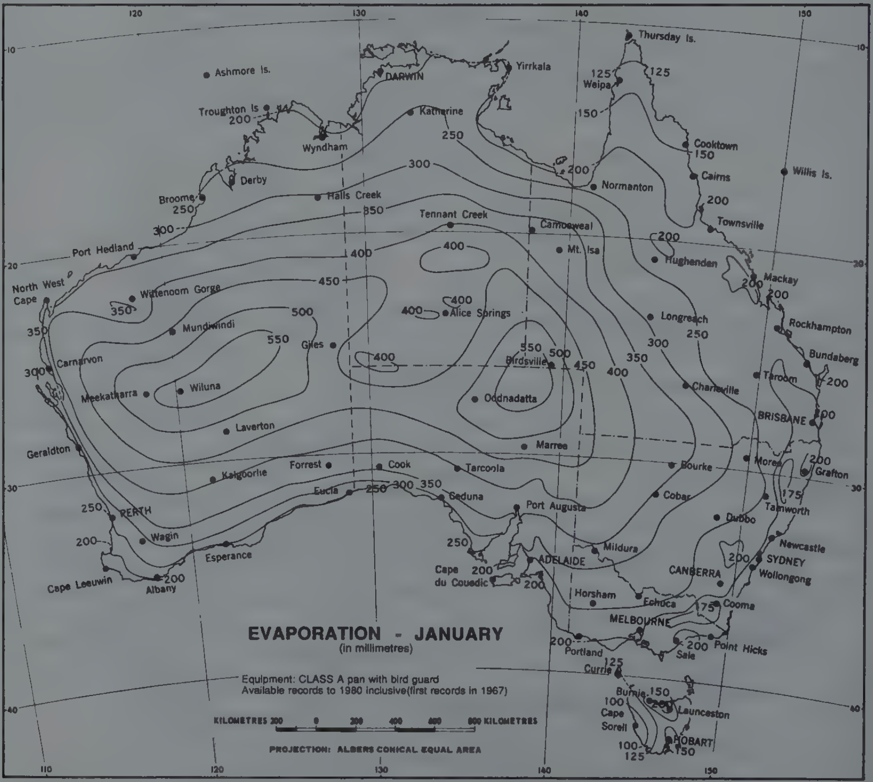
(20, 50 and 80 percentile values)

Station	Period of record	January Percentile 20	50	80	July Percentile 20	50	80
Adelaide	1955–1986	6.8	11.9	13.3	1.1	4.0	7.3
Alice Springs. . . .	1954–1986	7.8	11.8	13.0	7.6	10.4	10.7
Brisbane	1951–1985	2.6	8.4	11.5	4.5	9.0	9.9
Canberra	1978–1986	7.0	11.3	12.7	2.4	6.4	8.3
Darwin	1951–1986	1.5	5.9	9.4	9.8	10.6	10.9
Hobart	1950–1986	4.3	8.7	12.1	1.5	4.4	7.2
Melbourne	1955–1986	5.5	9.9	12.6	0.8	3.6	6.3
Perth	1942–1986	9.2	12.0	12.7	2.5	5.4	8.6
Sydney	1955–1986	1.9	8.1	11.6	3.2	7.5	9.3
Townsville	1943–1986	3.0	9.0	11.3	6.7	10.0	10.6

Evaporation

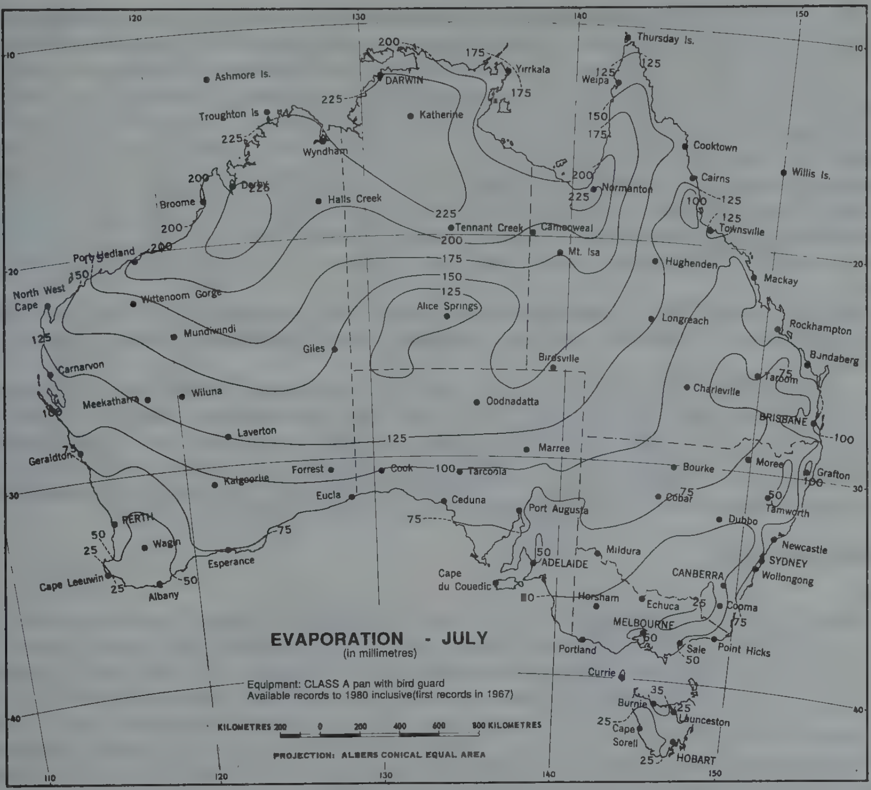
Evaporation is determined by measuring the amount of water evaporated from a free water surface exposed in a pan. Evaporation from a free water surface depends on a number of climatic elements, mainly temperature, humidity and wind. Evaporation data are useful in water conservation studies and in estimating potential evapotranspiration for irrigation and plant growth studies. In Australia. where surface water storage is vital over large areas, evaporation is a highly significant element.

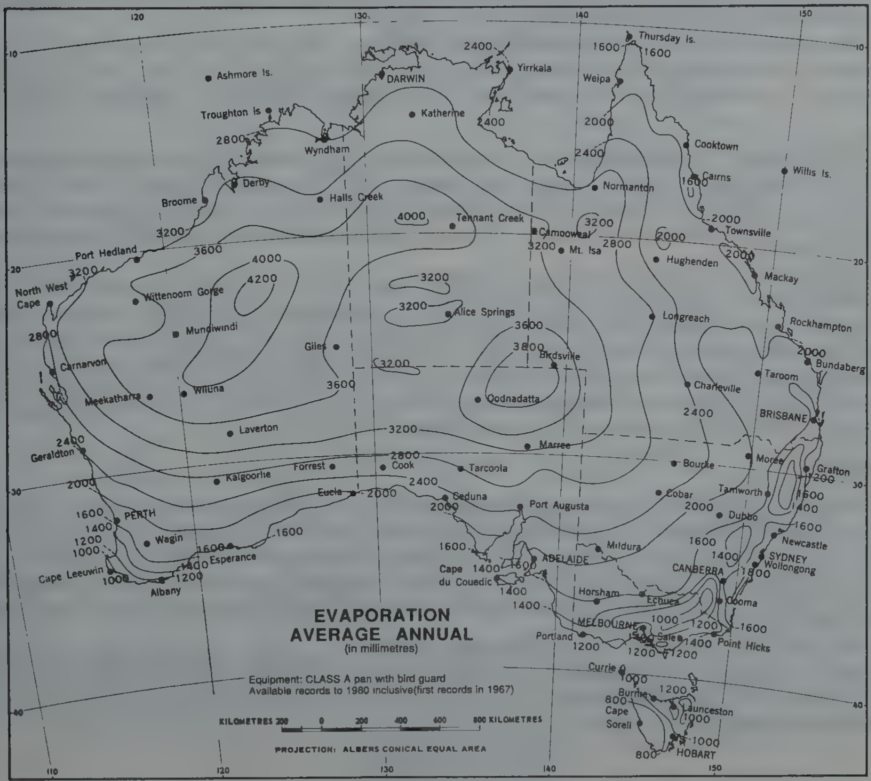
Average January, July and annual (Class A) pan evaporation is mapped in Figures 23, 24 and 25 respectively.


EVAPORATION - JANUARY
(in millimetres)
120
130
140
150
110
10
20
30
40
Thursday Is.
Ashmore Is.
DARWIN
Yirrkala
Weipa
Troughton Is
Katherine
Wyndham
Derby
Cooktown
Cairns
Willis Is.
Normanton
Broome
Halls Creek
Tennant Creek
Townsville
Camooweal
Mt. Isa
Port Hedland
Hughenden
Mackay
North West Cape
Wittenoom Gorge
Alice Springs
Longreach
Rockhampton
Mundiwindi
Giles
Carnarvon
Birdsville
Bundaberg
Taroom
Meekatharra
Wiluna
Oodnadatta
Charleville
BRISBANE
Laverton
Marree
Geraldton
Forrest
Cook
Tarcoola
Bourke
Moree
Grafton
Kalgoorlie
Eucla
Ceduna
Cobar
PERTH
Port Augusta
Tamworth
Dubbo
Wagin
Mildura
Newcastle
Esperance
SYDNEY
Wollongong
ADELAIDE
CANBERRA
Cape Leeuwin
Albany
Cape du Couedic
Horsham
Echuca
Cooma
MELBOURNE
Point Hicks
Sale
Portland
Currie
Burnie
Launceston
Cape Sorell
HOBART
100
125
150
175
200
250
300
350
400
450
500
550
KILOMETRES 200 0 200 400 600 800 KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA

Equipment: CLASS A pan with bird guard
Available records to 1980 inclusive(first records in 1967)

FIGURE 23


EVAPORATION - JULY
(in millimetres)
Equipment: CLASS A pan with bird guard
Available records to 1980 inclusive(first records in 1967)
KILOMETRES 200 0 200 400 600 800 KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA
Thursday Is.
Ashmore Is.
DARWIN
Yirrkala
Weipa
Troughton Is
Katherine
Wyndham
Cooktown
Willis Is.
Derby
Normanton
Cairns
Broome
Halls Creek
Townsville
Tennant Creek
Camooweal
Port Hedland
Mt. Isa
Hughenden
Mackay
North West Cape
Wittenoom Gorge
Alice Springs
Longreach
Rockhampton
Mundiwindi
Giles
Bundaberg
Carnarvon
Birdsville
Taroom
Meekatharra
Wiluna
Oodnadatta
Charleville
BRISBANE
Laverton
Marree
Geraldton
Forrest
Cook
Tarcoola
Bourke
Moree
Grafton
Kalgoorlie
Eucla
Ceduna
Port Augusta
Cobar
Tamworth
Dubbo
PERTH
Wagin
Mildura
Newcastle
SYDNEY
Wollongong
Esperance
ADELAIDE
CANBERRA
Cape Leeuwin
Albany
Cape du Couedic
Horsham
Echuca
Cooma
MELBOURNE
Portland
Sale
Point Hicks
Currie
Burnie
Launceston
Cape Sorell
HOBART


EVAPORATION
AVERAGE ANNUAL
(in millimetres)
Equipment: CLASS A pan with bird guard
Available records to 1980 inclusive(first records in 1967)
KILOMETRES 200 0 200 400 600 800 KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA
Thursday Is.
Ashmore Is.
DARWIN
Yirrkala
Weipa
Troughton Is
Katherine
Wyndham
Cooktown
Willis Is.
Derby
Normanton
Cairns
Broome
Halls Creek
Tennant Creek
Townsville
Camooweal
Port Hedland
Mt. Isa
Hughenden
Mackay
North West Cape
Wittenoom Gorge
Alice Springs
Longreach
Rockhampton
Mundiwindi
Giles
Birdsville
Bundaberg
Carnarvon
Taroom
Meekatharra
Wiluna
Oodnadatta
Charleville
BRISBANE
Laverton
Marree
Geraldton
Forrest
Cook
Tarcoola
Bourke
Moree
Grafton
Kalgoorlie
Eucla
Ceduna
Port Augusta
Cobar
Tamworth
Dubbo
PERTH
Wagin
Newcastle
Mildura
SYDNEY
Wollongong
Esperance
ADELAIDE
CANBERRA
Cape Leeuwin
Albany
Cape du Couedic
Horsham
Echuca
Cooma
MELBOURNE
Portland
Sale
Point Hicks
Currie
Burnie
Launceston
Cape Sorell
HOBART

FIGURES 24 AND 25

Due to the relatively short records at some stations, the maps may not be representative of climate averages in some areas. Dashed isopleths on the maps over some coastal fringes to aid interpolation do not represent evaporation from ocean surfaces or expanses of water.

Evaporation varies markedly with exposure of the instrument. Sheltering from wind and shading of pans cause local variations in measured evaporation of as much as 25 per cent. Instruments near expanses of water such as coastal inlets, rivers, reservoirs or irrigation systems may record lower evaporation than the surrounding country due to local effects on meteorological elements, notably humidity. Such reductions are about five to ten per cent.

The Class A pan instruments have a wire mesh bird guard, which reduces the measured evaporation. An estimate of the unguarded average Class A pan evaporation for any locality may be derived by applying a seven per cent increase to the value interpolated from the maps.

Average annual Class A pan evaporation ranges from more than 4,000 mm over central Western Australia to less than 1,000 mm in alpine areas of south-east Australia and in much of Tasmania.

In areas south of the tropics, average monthly evaporation follows seasonal changes in solar radiation, giving highest evaporation in December and January, and lowest in June and July. In the tropics, onset of summer brings increasing cloudiness and higher humidity, causing reduced evaporation in these months and a secondary minimum in February. Maximum evaporation in tropical areas occurs around November on average, but high evaporation is sustained when summer rains are delayed or are persistently below average.

Cloud and fog

Cloud

Seasonal changes in cloudiness vary with the distribution of rainfall. In the southern parts of the continent, particularly in the coastal and low lying areas, the winter months are generally more cloudy than the summer months. This is due to the formation of extensive areas of stratiform cloud and fog during the colder months, when the structure of the lower layers of the atmosphere favours the physical processes resulting in this type of cloud. Particularly strong seasonal variability of cloud cover exists in northern Australia where skies are clouded during the summer wet season and mainly cloudless during the winter dry season. Cloud coverage is greater near coasts and on the windward slopes of the eastern uplands of Australia and less over the dry interior.

The average monthly and annual number of cloudy days (days when the cloud coverage was greater than or equal to seven-eighths of the sky) and clear days (less than or equal to one-eighth) is included for the capital cities in the detailed capital city statistical tables.

Fog

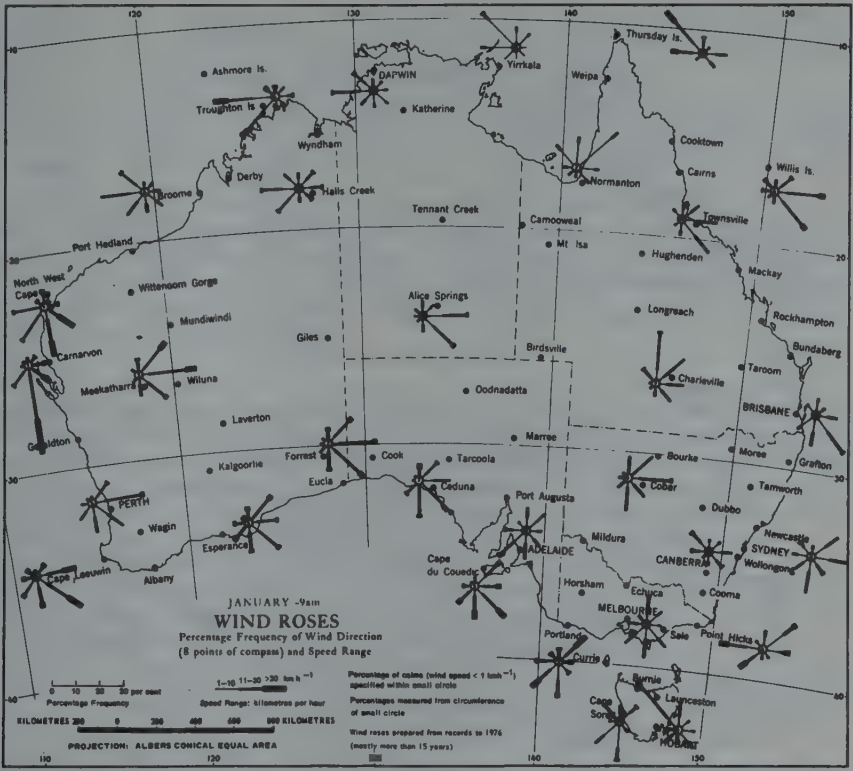
The formation of fog depends on the occurrence of favourable meteorological elements—mainly temperature, humidity, wind and cloud cover. The nature of the local terrain is important for the development of fog and there is a tendency for this phenomenon to persist in valleys and hollows. The incidence of fog may vary significantly over distances as short as one kilometre.

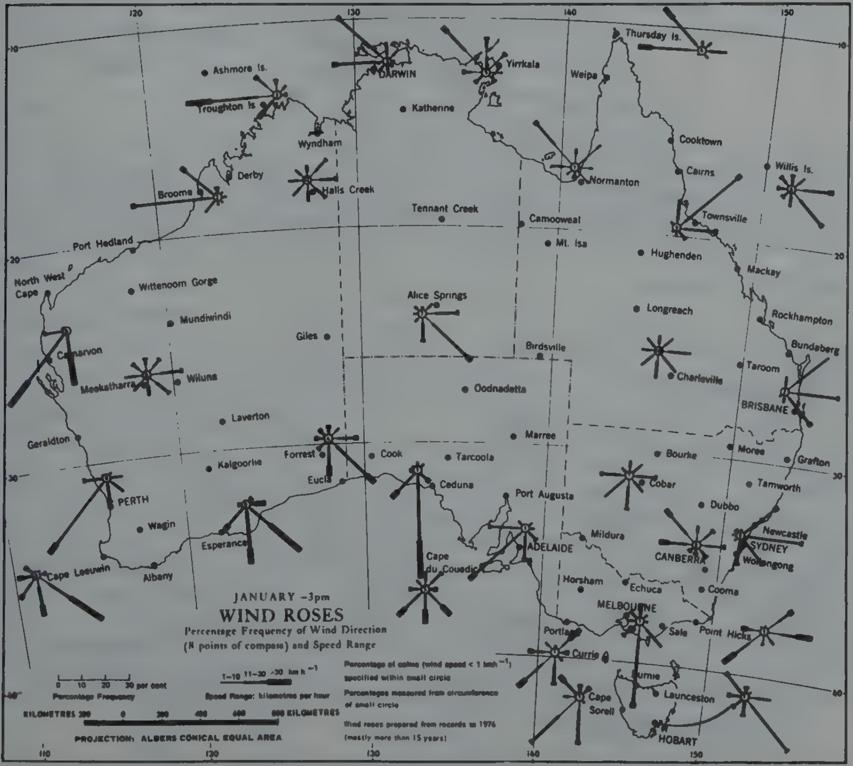
Fog in Australia tends to be greater in the south than the north, although parts of the east coastal areas are relatively fog prone even in the tropics. Incidence is much greater in the colder months, particularly in the eastern uplands. Fog may persist during the day but rarely until the afternoon over the interior. The highest fog incidence at a capital city is at Canberra which has an average of 47 days per year on which fog occurs, 26 of which are in the period May to August. Brisbane averages 20 days of fog per year. Darwin averages only 2 days per year, in the months of July and August.

Winds

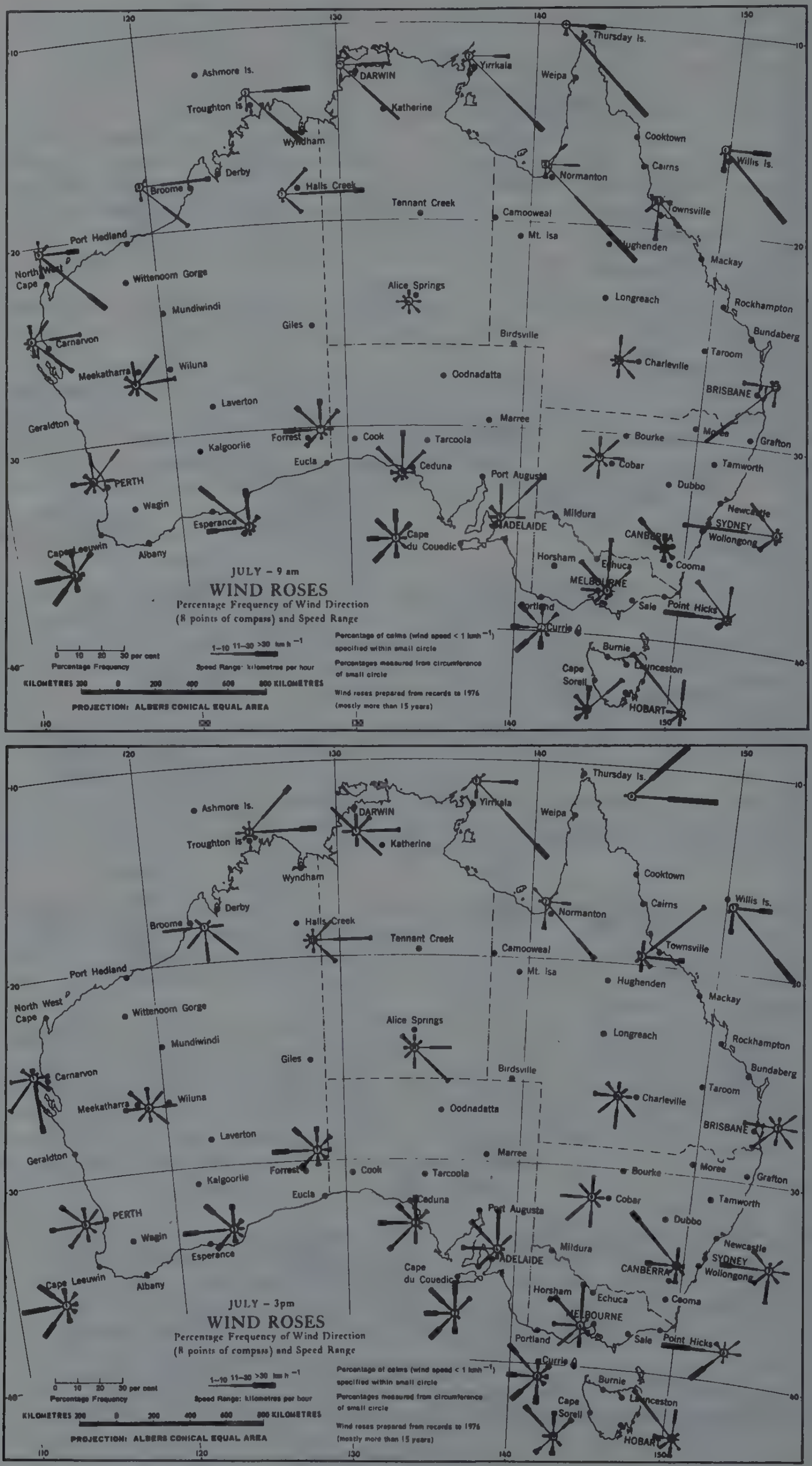
The mid-latitude anticyclones are the chief determinants of Australia's two main prevailing wind streams. In relation to the west-east axes of the anticyclones these streams are easterly to the north and westerly to the south. The cycles of development, motion and decay of low pressure systems to the north and south of the anticyclones result in diversity of wind flow patterns. Wind variations are greatest around the coasts where diurnal land and sea breeze effects are important.

Wind roses for the months of January and July at 9 a.m. and 3 p.m. at selected stations are shown in Figures 26 to 29 inclusive, extracted from *Climatic Atlas of Australia, Map Set 8*, 1979. The wind roses show the percentage frequency of direction (eight points of compass) and speed ranges of winds.


JANUARY -9am
WIND ROSES
Percentage Frequency of Wind Direction
(8 points of compass) and Speed Range
0 10 20 30 per cent
Percentage Frequency
1–10 11–30 >30 km h⁻¹
Speed Range: kilometres per hour
Percentage of calms (wind speed < 1 km h⁻¹) specified within small circle
Percentages measured from circumference of small circle
Wind roses prepared from records to 1976 (mostly more than 15 years)
KILOMETRES 200 0 200 400 600 800 KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA
110
120
130
140
150
10
20
30
40
Ashmore Is.
Troughton Is
DARWIN
Katherine
Yirrkala
Thursday Is.
Weipa
Wyndham
Derby
Broome
Halls Creek
Cooktown
Cairns
Normanton
Willis Is.
Tennant Creek
Camooweal
Townsville
Mt Isa
Hughenden
Mackay
Port Hedland
North West Cape
Wittenoom Gorge
Mundiwindi
Alice Springs
Longreach
Rockhampton
Giles
Carnarvon
Birdsville
Bundaberg
Meekatharra
Wiluna
Charleville
Taroom
Oodnadatta
Laverton
BRISBANE
Geraldton
Marree
Bourke
Moree
Grafton
Forrest
Cook
Tarcoola
Kalgoorlie
Eucla
Ceduna
Cobar
Tamworth
PERTH
Port Augusta
Dubbo
Wagin
Esperance
Mildura
Newcastle
SYDNEY
Wollongong
ADELAIDE
CANBERRA
Cape du Couedic
Cape Leeuwin
Albany
Horsham
Echuca
Cooma
MELBOURNE
Portland
Sale
Point Hicks
Currie
Burnie
Launceston
Cape Sorell
HOBART


JANUARY -3pm
WIND ROSES
Percentage Frequency of Wind Direction
(8 points of compass) and Speed Range
0 10 20 30 per cent
Percentage Frequency
1–10 11–30 >30 km h⁻¹
Speed Range: kilometres per hour
Percentage of calms (wind speed < 1 km h⁻¹) specified within small circle
Percentages measured from circumference of small circle
Wind roses prepared from records to 1976 (mostly more than 15 years)
KILOMETRES 200 0 200 400 600 800 KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA
110
120
130
140
150
10
20
30
40
Ashmore Is.
Troughton Is
DARWIN
Katherine
Yirrkala
Thursday Is.
Weipa
Wyndham
Derby
Broome
Halls Creek
Cooktown
Cairns
Normanton
Willis Is.
Tennant Creek
Camooweal
Townsville
Mt. Isa
Hughenden
Mackay
Port Hedland
North West Cape
Wittenoom Gorge
Mundiwindi
Alice Springs
Longreach
Rockhampton
Giles
Carnarvon
Birdsville
Bundaberg
Meekatharra
Wiluna
Charleville
Taroom
Oodnadatta
Laverton
BRISBANE
Geraldton
Marree
Bourke
Moree
Grafton
Forrest
Cook
Tarcoola
Kalgoorlie
Eucla
Ceduna
Cobar
Tamworth
PERTH
Port Augusta
Dubbo
Wagin
Esperance
Mildura
Newcastle
SYDNEY
Wollongong
ADELAIDE
CANBERRA
Cape du Couedic
Cape Leeuwin
Albany
Horsham
Echuca
Cooma
MELBOURNE
Portland
Sale
Point Hicks
Currie
Burnie
Launceston
Cape Sorell
HOBART

FIGURES 26 AND 27


JULY – 9 am
WIND ROSES
Percentage Frequency of Wind Direction
(8 points of compass) and Speed Range
0 10 20 30 per cent
Percentage Frequency
1–10 11–30 >30 km h⁻¹
Speed Range: kilometres per hour
Percentage of calms (wind speed < 1 kmh⁻¹) specified within small circle
Percentages measured from circumference of small circle
Wind roses prepared from records to 1976 (mostly more than 15 years)
KILOMETRES 200 0 200 400 600 800 KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA
Ashmore Is.
Troughton Is.
Wyndham
DARWIN
Katherine
Yirrkala
Weipa
Thursday Is.
Cooktown
Cairns
Willis Is.
Normanton
Townsville
Derby
Broome
Halls Creek
Tennant Creek
Camooweal
Mt. Isa
Hughenden
Mackay
Port Hedland
North West Cape
Wittenoom Gorge
Mundiwindi
Alice Springs
Longreach
Rockhampton
Bundaberg
Giles
Birdsville
Carnarvon
Meekatharra
Wiluna
Charleville
Taroom
BRISBANE
Oodnadatta
Laverton
Marree
Geraldton
Forrest
Cook
Tarcoola
Bourke
Moree
Grafton
Kalgoorlie
Eucla
Ceduna
Cobar
Tamworth
PERTH
Port Augusta
Dubbo
Wagin
Esperance
Mildura
Newcastle
SYDNEY
Wollongong
Cape du Couedic
ADELAIDE
CANBERRA
Cape Leeuwin
Albany
Horsham
Echuca
Cooma
MELBOURNE
Sale
Point Hicks
Portland
Currie
Burnie
Launceston
Cape Sorell
HOBART
JULY – 3pm
WIND ROSES
Percentage Frequency of Wind Direction
(8 points of compass) and Speed Range

FIGURES 28 AND 29

Orography affects the prevailing wind pattern in various ways such as the channelling of winds through valleys, deflection by mountains and cold air drainage from highland areas. An example of this channelling is the high frequency of north-west winds at Hobart caused by the north-west south-east orientation of the Derwent River Valley.

Average wind speeds and prevailing directions at Australian capitals are included in the detailed climatic tables. Perth is the windiest capital with an average wind speed of 15.6 kilometres per hour; Canberra is the least windy with an average speed of 5.4 kilometres per hour.

The highest wind speeds and wind gusts recorded in Australia have been associated with tropical cyclones. The highest recorded gust was 259 kilometres per hour at Mardie (near Onslow), Western Australia on 19 February 1975, and gusts reaching 200 kilometres per hour have been recorded on several occasions in northern Australia with cyclone visitations. The highest gusts recorded at Australian capitals were 217 kilometres per hour at Darwin and 156 kilometres per hour at Perth.

Floods

Widespread flood rainfall may occur anywhere in Australia but it has a higher incidence in the north and in the eastern coastal areas. It is most economically damaging along the shorter streams flowing from the eastern uplands eastward to the seaboard of Queensland and New South Wales. These flood rains are notably destructive in the more densely populated coastal river valleys of New South Wales; the Tweed, Richmond, Clarence, Macleay, Hunter and Nepean-Hawkesbury; all of which experience relatively frequent flooding. Although chiefly caused by summer rains, they may occur in any season.

The great Fitzroy and Burdekin river basins of Queensland receive flood rains during the summer wet season. Much of the run-off due to heavy rain in north Queensland west of the eastern uplands flows southward through the normally dry channels of the network of rivers draining the interior lowlands into Lake Eyre. This widespread rain may cause floods over an extensive area, but it soon seeps away or evaporates, occasionally reaching the lake in quantity. The Condamine and other northern tributaries of the Darling also carry large volumes of water from flood rains south through western New South Wales to the Murray and flooding occurs along their courses at times.

Flood rains occur at irregular intervals in the Murray-Murrumbidgee system of New South Wales and Victoria, the coastal streams of southern Victoria and the north coast streams of Tasmania.

Droughts

Drought, in general terms, refers to an acute water shortage. This is normally due to rainfall deficiency but with other parameters contributing to the actual water availability. The best single measure of water availability in Australia is rainfall; although parameters such as evaporation and soil moisture are significant or even dominant in some situations.

An article on the incidence of drought in Australia is included in Chapter 16, Water Resources.

Climatic discomfort

In Australia climatic discomfort is significant in most areas. During the summer half of the year (November–April), prolonged high temperatures and humidity around the northern coasts and high temperatures over the inland cause physical stress. In winter, low temperatures and strong cold winds over the interior and southern areas can be severe for relatively short periods. However, cold stress does not cause prolonged physical hardship in Australia at altitudes lower than 1,000 metres, that is, over more than 99 per cent of the continent.

The climatic variables determining physical discomfort are primarily air temperature, vapour pressure and wind. The complete assessment of physical discomfort also requires analyses of such parameters as thermal conductivity of clothing, vapour pressure at the skin and the metabolic heat rate arising from activity of the human body. The cooling system of the human body depends on evaporation of moisture to keep body temperature from rising to lethal levels as air temperature rises. Defining criteria of discomfort is difficult because personal reactions to the weather differ greatly according to a number of variables including health, age, clothing, occupation and acclimatisation (Ashton, 1964). However, climatic strain has been measured experimentally and discomfort indexes based on the average response of subjects under specified conditions have been derived. One of the most commonly used indexes is the relative strain index. The index, derived by Lee and Henschel (1963), has been applied in Australia to measure heat discomfort. The results obtained with Australian data are useful for purposes of comparison but interpretation of the actual results is tentative until empirical environmental studies are carried out in this region. In addition to temperature, humidity and air movement, the relative strain index has facilities for the incorporation of metabolic heat rate, net radiation and insulation of clothing. It has the advantage of being applicable to manual workers under shelter and expending energy at various metabolic heat rates.

The discomfort map, Figure 30, shows the average number of days per year when the relative strain index exceeds 0.3 discomfort level at 3 p.m. assuming standard conditions as defined (*see* following table). Maximum discomfort generally occurs around 3 p.m. on days of high temperature.

A notable feature is the lower frequency of days of discomfort in Queensland coastal areas in comparison with the northern coastal areas of Western Australia. This is due to the onshore winds prevailing on the Queensland coast and the cooling effect of the adjacent eastern uplands. Lower frequencies on the Atherton Plateau in the tropics near Cairns show the advantage of altitude. Relatively low heat discomfort frequencies are evident in upland and coast areas of south-east Australia. Tasmania is entirely in the zone of least discomfort, experiencing on the average less than one day of heat discomfort per year. In Western Australia most of the Kimberley region in the north lies in the highest discomfort zone with the frequencies decreasing southwards to a strip of lowest discomfort towards the south-west coast. A steep gradient of discomfort frequency on the west coast shows the moderating effect of sea breezes.

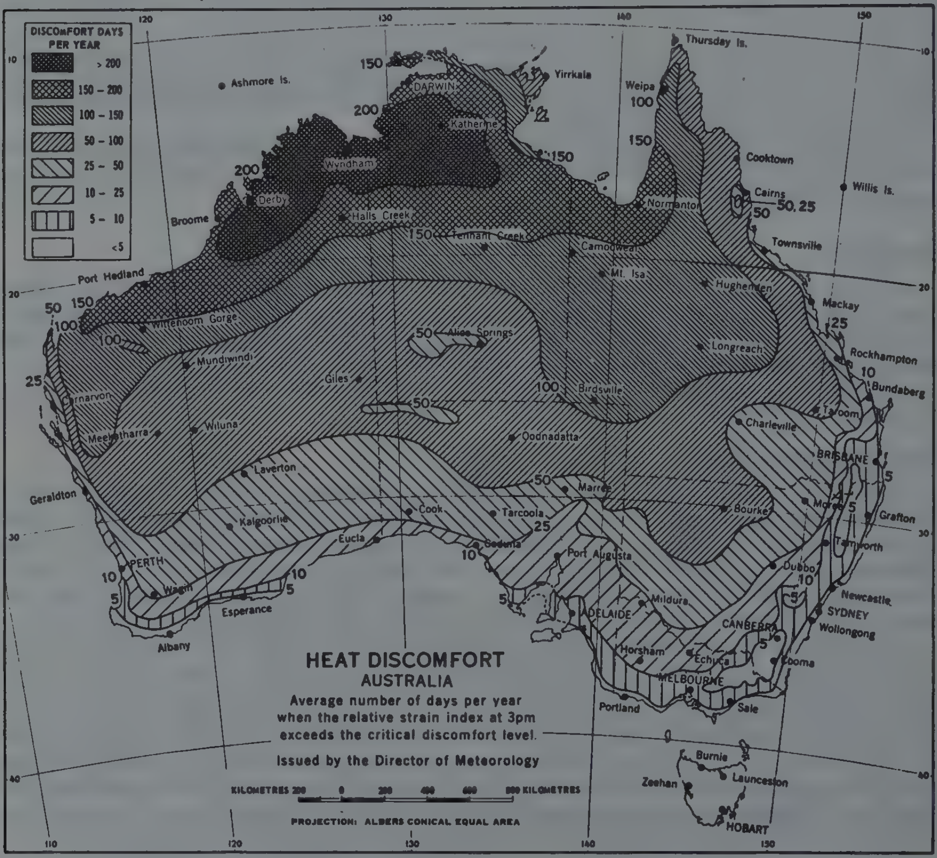

DISCOMFORT DAYS PER YEAR
> 200
150 – 200
100 – 150
50 – 100
25 – 50
10 – 25
5 – 10
<5
HEAT DISCOMFORT
AUSTRALIA
Average number of days per year when the relative strain index at 3pm exceeds the critical discomfort level.
Issued by the Director of Meteorology
KILOMETRES 200 0 200 400 600 800 KILOMETRES
PROJECTION: ALBERS CONICAL EQUAL AREA
Ashmore Is.
DARWIN
Katherine
Wyndham
Derby
Broome
Halls Creek
Tennant Creek
Port Hedland
Wittenoom Gorge
Mundiwindi
Carnarvon
Meekatharra
Wiluna
Giles
Alice Springs
Geraldton
Laverton
Kalgoorlie
PERTH
Wagin
Esperance
Albany
Eucla
Cook
Tarcoola
Ceduna
Port Augusta
ADELAIDE
Oodnadatta
Marree
Birdsville
Camooweal
Mt. Isa
Thursday Is.
Yirrkala
Weipa
Normanton
Cooktown
Cairns
Willis Is.
Townsville
Hughenden
Longreach
Mackay
Rockhampton
Bundaberg
Taroom
Charleville
BRISBANE
Moree
Grafton
Bourke
Tamworth
Dubbo
Newcastle
SYDNEY
Wollongong
CANBERRA
Cooma
Mildura
Horsham
Echuca
MELBOURNE
Portland
Sale
Burnie
Zeehan
Launceston
HOBART
200
150
100
50
25
10
5
110
120
130
140
150
10
20
30
40

FIGURE 30

The average annual frequency of days when the relative strain index at 3 p.m. exceeds specified discomfort levels is shown in the table below. The Sydney frequencies were derived from observations at the regional office of the Bureau of Meteorology, which is representative of eastern coastal suburbs; frequencies are higher in western suburbs. The Melbourne frequencies were derived from observations at the Bureau's regional office, which may be taken as fairly representative of inner northern and eastern suburbs; frequencies are lower in bayside suburbs. Similarly, in other capital city areas significant variations occur with distance from the coast.

HEAT DISCOMFORT(*a*)

Station	*Period of record*	*Greater than* 0.3 RSI	*Greater than* 0.4 RSI
Adelaide	1955–72	7	1
Albury	1962–71	8	1
Alice Springs	1955–67	50	4
Brisbane	1951–69	6	<1
Broome	1940–72	155	48
Canberra	1940–72	2	<1
Carnarvon	1945–72	23	3
Ceduna	1955–71	16	3
Charleville	1942–72	42	3
Cloncurry	1940–72	126	28
Darwin	1955–69	165	23
Hobart	1944–67	<1	<1
Kalgoorlie	1939–72	30	5
Marble Bar	1957–71	173	69
Melbourne	1955–71	6	1
Mildura	1946–72	19	3
Perth	1944–72	12	1
Rockhampton	1940–72	33	5
Sydney	1955–72	2	<1
Townsville	1941–69	36	4
Woomera	1954–72	25	3

(*a*) Average number of days per year when relative strain index (RSI) at 3 p.m. exceeds 0.3 (discomfort) and 0.4 (high discomfort) under standard conditions (indoors, manual activities, light clothing, air movement 60 metres per minute).

At inland places, relatively low night temperatures have recuperative effects after hot days.

Acclimatised people would suffer discomfort less frequently than shown by the relative strain index figures. For example, Australians living in the north evidently experience less discomfort at high air temperatures than those in the south, if humidities are comparable.

Both direction and speed of prevailing winds are significant for the ventilation of buildings. In the tropics, for instance, windward slopes allow optimal air movement enabling more comfortable ventilation to be obtained. Regular sea breezes such as those experienced at Perth reduce discomfort although on some days their full benefit may not be experienced until after 3 p.m.

Climatic data for capital cities

The averages for a number of elements determined from long-period observations at the Australian capitals (generally available years to 1986 inclusive) are given in the following pages. Extremes generally cover all available data to July 1986 inclusive, whereas averages may only refer to present sites.

CLIMATIC DATA: SYDNEY, NEW SOUTH WALES

(Lat. 33° 52′ S., Long. 151° 12′ E. Height above mean sea level (M.S.L.) 42 metres)

BAROMETER, WIND, EVAPORATION, THUNDER, CLOUDS AND CLEAR DAYS

Month	Mean of 9 a.m. and 3 p.m. atmospheric pressure reduced to mean sea level (hPa)	Wind (height of anemometer 22 metres)				Mean amount evaporation (mm)	Mean No. days thunder	Mean No. cloudy days (a)	Mean No. clear days (b)
		Average (km/h)	Highest gust speed (km/h)	Prevailing direction 9 a.m.	Prevailing direction 3 p.m.				
No. of years of record	72	(c)25	62	(c)25	(c)25	(d)7	67	31	76
January	1,012.7	12.3	150	NE	NE	220	3.2	12	5.1
February	1,014.3	11.6	111	NE	ENE	178	2.5	11	4.6
March	1,016.4	10.5	96	WNW	ENE	164	1.6	10	5.9
April	1,018.3	10.2	116	W	ENE	123	1.2	8	7.7
May	1,018.9	10.5	135	W	ENE	93	0.8	8	7.9
June	1,018.8	11.6	135	W	WSW	78	0.8	9	8.2
July	1,018.6	11.5	109	W	WSW	90	0.7	6	10.7
August	1,017.9	12.1	113	WNW	WNW	115	1.3	6	10.9
September	1,017.0	11.6	131	WNW	NE	141	1.8	7	9.0
October	1,015.3	12.3	153	WNW	ENE	171	2.6	10	6.5
November	1,013.6	12.4	118	WNW	ENE	192	3.5	10	5.3
December	1,012.0	12.3	121	NE	ENE	239	3.6	10	5.0
Totals	..	..	..	..	..	**1,804**	**23.7**	**107**	**86.8**
Year Averages	**1,016.1**	**11.6**	..	WNW	ENE	..	..	..	..
Extremes	..	..	**153**	..	..	..	..	..	..

(*a*) Mean number of days when cloud cover equalled or exceeded seven-eighths. (*b*) Mean number of days when cloud cover was less than or equal to one-eighth. (*c*) Years 1938–1962 inclusive. (*d*) Sydney Airport, Class—A Pan (1974-80)

TEMPERATURE AND SUNSHINE

Month	Air temperature daily readings (°Celsius)			Extreme air temperature (°Celsius)						Mean daily hours sunshine
	Mean max.	Mean min.	Mean	Highest		Lowest		Lowest on grass		
No. of years of record	123	123	123		123		123		124	61
January	25.8	18.4	22.1	45.3	14/39	10.6	18/49	6.5	6/25	7.2
February	25.5	18.5	22.0	42.1	8/26	9.6	28/63*	6.0	22/33	6.8
March	24.6	17.4	21.0	39.2	3/69*	9.3	14/86*	4.4	17/13	6.3
April	22.2	14.6	18.4	33.9	5/86	7.0	27/64*	0.7	24/09	6.3
May	19.7	11.3	15.5	30.0	1/19	4.4	30/62*	−1.5	25/17	5.8
June	16.7	9.2	12.9	26.9	11/31	2.1	22/32	−2.2	22/32	5.3
July	15.9	7.9	11.9	25.7	22/26	2.2	12/90*	−4.4	4/93*	6.3
August	17.5	8.9	13.2	30.4	24/54	2.7	3/72*	−3.3	4/09	6.9
September	19.7	10.9	15.3	34.6	26/65	4.9	2/45	−1.1	17/05	7.2
October	21.9	13.4	17.7	37.4	4/42	5.7	6/27	0.4	9/05	7.3
November	23.5	15.5	19.5	40.3	6/46	7.7	1/05	1.9	21/67	7.6
December	25.0	17.3	21.1	42.2	20/57	9.1	3/24	5.2	3/24	7.5
Year Averages	**21.5**	**13.6**	**17.4**	..	..	..	..	..	..	**6.7**
Extremes	..	..	..	**45.3**		**2.1**		**−4.4**		..
					14/1/39		**22/6/32**		**4/7/1893**	

CLIMATIC DATA: SYDNEY, NEW SOUTH WALES—*continued*

(Lat. 33° 52′ S., Long. 151° 12′ E. Height above mean sea level (M.S.L.) 42 metres)

HUMIDITY, RAINFALL AND FOG

Month	*Rel. hum. (%)* 9 a.m. mean	*Rel. hum. (%)* 3 p.m. mean	*Rainfall (millimetres)* Mean monthly	Mean No. of days of rain	Greatest monthly	Least monthly	Greatest in one day		Fog mean No. days
No. of years of record	31	31	123	123	123	123		123	61
January	69	62	102	13	388 (1911)	6 (1932)	180	13/11	0.3
February	72	64	113	13	564 (1954)	3 (1939)	226	25/73*	0.6
March	72	62	135	14	521 (1942)	8 (1965)	281	28/42	1.3
April	71	58	124	13	622 (1861)	2 (1868)	191	29/60*	1.9
May	72	55	121	13	585 (1919)	4 (1957)	212	28/89*	3.0
June	74	57	131	12	643 (1950)	4 (1962)	131	16/84*	2.4
July	69	50	101	11	336 (1950)	2 (1970)	198	7/31	1.9
August	66	49	80	11	471 (1986)	1 (1885)	328	6/86	1.5
September	62	51	69	11	357 (1879)	2 (1882)	145	10/79*	0.9
October	61	56	78	12	283 (*a*)	2 (1971)	162	13/02	0.6
November	63	57	81	12	517 (1961)	2 (1915)	235	9/84	0.5
December	65	59	77	12	402 (1920)	3 (1979)	126	9/70	0.4
Year Totals	..	..	**1,214**	**148**	..	..	..	..	**15.2**
Year Averages	**68**	**57**	..	..	..	..	..	..	..
Year Extremes	..	..	..	..	**643 (6/1950)**	**1 (8/1885)**	**281**	**28/3/1942**	..

(*a*) 1916 and 1959.

NOTE: Figures such as 10/49, 28/63, etc. indicate, in respect of the month of reference, the day and year of the occurrence. Dates marked with an asterisk(*) relate to nineteenth century. Bracketed figures indicate year of occurrence.

CLIMATIC DATA: MELBOURNE, VICTORIA

(Lat. 37° 49′ S., Long. 144° 58′ E. Height above M.S.L. 35 metres)

BAROMETER, WIND, EVAPORATION, THUNDER, CLOUDS AND CLEAR DAYS

Month	*Mean of 9 a.m. and 3 p.m. atmospheric pressure reduced to mean sea level (hPa)*	*Wind (height of anemometer 28 metres)* Average (km/h)	Highest gust speed (km/h)	Prevailing direction 9 a.m.	Prevailing direction 3 p.m.	*Mean amount evaporation (mm)*	*Mean No. days thunder*	*Mean No. cloudy days(a)*	*Mean No. clear days(b)*
No. of years of record	130	(*c*)47	77	68	68	(*d*)20	79	31	79
January	1,012.9	11.9	106	S	S	204	1.6	7	6.5
February	1,014.4	11.5	119	S	S	179	1.7	7	6.2
March	1,016.8	10.5	106	N	S	135	1.3	10	5.4
April	1,019.0	10.1	108	N	S	91	0.7	11	4.2
May	1,019.2	10.6	116	N	N	57	0.4	14	2.9
June	1,019.0	10.8	103	N	N	36	0.2	13	2.7
July	1,018.6	12.1	109	N	N	43	0.2	12	2.6
August	1,017.6	12.1	108	N	N	61	0.6	13	2.7
September	1,016.0	12.4	120	N	S	85	0.7	11	3.6
October	1,014.8	12.2	111	N	S	125	1.5	12	3.6
November	1,014.0	12.5	114	SW	S	151	1.9	12	3.2
December	1,012.4	12.3	104	S	S	187	2.1	10	4.2
Year Totals	..	..	..	..	..	**1,356**	**12.8**	**132**	**48.0**
Year Averages	**1,016.2**	**11.7**	..	**N**	**S**	..	..		..
Year Extremes	..	..	**120**	..	..	..	..		..

(*a*) Mean number of days when cloud cover equalled or exceeded seven-eighths. (*b*) Mean number of days when cloud cover was less than or equal to one-eighth. (*c*) Early records not comparable. (*d*) Class-A Pan.

CLIMATIC DATA: MELBOURNE, VICTORIA—*continued*

(Lat. 37° 49′ S., Long. 144° 58′ E. Height above M.S.L. 35 metres)

TEMPERATURE AND SUNSHINE

Month	Air temperature daily readings (°Celsius) Mean max.	Mean min.	Mean	Extreme air temperature (°Celsius) Highest		Lowest		Extreme temperature (°Celsius) Lowest on grass		Mean daily hours sunshine
No. of years of record	131	131	131	131		131		122		(a)52
January	25.8	14.0	19.9	45.6	13/39	5.6	28/85*	−1.0	28/85*	8.1
February	25.7	14.3	20.0	43.2	8/83	4.6	24/24	−0.6	6/91*	7.5
March	23.8	13.0	18.4	41.7	11/40	2.8	17/84*	−1.7	(b)	6.6
April	20.1	10.6	15.3	34.9	5/38	1.6	24/88*	−3.9	23/97*	5.1
May	16.5	8.5	12.5	28.7	7/05	−1.2	29/16	−6.1	26/16	3.9
June	13.9	6.7	10.3	22.4	2/57	−2.2	11/66*	−6.7	30/29	3.4
July	13.3	5.7	9.5	23.1	30/75	−2.8	21/69*	−6.4	12/03	3.7
August	14.8	6.5	10.7	26.5	29/82	−2.1	11/63*	−5.9	14/02	4.6
September	17.1	7.7	12.4	31.4	28/28	−0.6	3/40	−5.1	8/18	5.5
October	19.5	9.3	14.4	36.9	24/14	0.1	3/71*	−4.0	22/18	5.9
November	21.8	10.9	16.4	40.9	27/94*	2.4	2/96*	−4.1	2/96*	6.5
December	24.1	12.7	18.4	43.7	15/76	4.4	4/70*	0.7	1/04	7.3
Year **Averages**	**19.7**	**10.0**	**14.9**	..	..	..	..	..	..	**5.7**
Year **Extremes**	..	..	..	**45.6**	**13/1/39**	**−2.8**	**21/7/69***	**−6.7**	**30/6/29**	..

(*a*) Discontinued 1967. (*b*) 17/1884 and 20/1897.

HUMIDITY, RAINFALL AND FOG

Month	Rel. hum. (%) 9 a.m. mean	3 p.m. mean	Rainfall (millimetres) Mean mthly	Mean No. of days of rain	Greatest monthly	Least monthly	Greatest in one day		Fog mean No. days
No. of years of record	78	78	131	131	131	131	128		129
January	59	46	47	8	176 (1963)	(*a*) (1932)	108	29/63	0.1
February	63	48	48	7	238 (1972)	(*a*) (1965)	87	26/46	0.3
March	65	50	53	9	191 (1911)	4 (1934)	90	5/19	0.7
April	72	54	58	11	195 (1960)	Nil (1923)	80	23/60	1.7
May	78	61	58	14	142 (1942)	4 (1934)	51	15/74	3.4
June	82	65	49	14	115 (1859)	8 (1858)	44	22/04	4.3
July	81	63	48	15	178 (1891)	9 (1979)	74	12/91*	4.1
August	75	58	51	15	111 (1939)	12 (1903)	54	17/81*	2.2
September	68	54	59	14	201 (1916)	13 (1907)	59	23/16	0.8
October	62	52	68	14	193 (1869)	7 (1914)	61	21/53	0.4
November	61	50	59	12	206 (1954)	6 (1895)	73	21/54	0.2
December	59	47	58	10	182 (1863)	1 (1972)	100	4/54	0.2
Year **Totals**	..	..	**655**	**143**	..	..	..	..	**18.2**
Year **Averages**	**69**	**54**	..	..	..	..	..	..	..
Year **Extremes**	..	..	..	..	**238 (2/72)**	**Nil (4/23)**	**108**	**29/1/63**	..

(*a*) Less than 1 mm.

NOTE: Figures such as 27/41, 28/85, etc. indicate, in respect of the month of reference, the day and year of the concurrence. Dates marked with an asterisk (*) relate to nineteenth century. Bracketed figures indicate year of occurrence.

CLIMATIC DATA: BRISBANE, QUEENSLAND

(Lat. 27° 28′ S., Long. 153° 2′ E. Height above M.S.L. 41 metres)

BAROMETER, WIND, EVAPORATION, THUNDER, CLOUDS AND CLEAR DAYS

		Wind (height of anemometer 32 metres)							
Month	*Mean of 9 a.m. and 3 p.m. atmospheric pressure reduced to mean sea level (hPa)*	*Average (km/h)*	*Highest gust speed (km/h)*	*Prevailing direction 9 a.m.*	*Prevailing direction 3 p.m.*	*Mean amount evaporation (mm)*	*Mean No. days thunder*	*Mean No. cloudy days(a)*	*Mean No. clear days(b)*
No. of years of record	99	70	71	(*c*)36	(*c*)36	(*d*)19	99	99	78
January	1,011.7	11.7	145	SE	NE	176	4.4	4	3.2
February	1,012.5	11.5	108	S	E	142	3.5	4	2.5
March	1,014.5	11.1	106	SW	E	140	2.2	4	5.5
April	1,017.1	10.1	104	SW	SE	114	1.4	2	7.7
May	1,018.5	9.5	87	SW	SE	81	0.5	3	9.5
June	1,018.4	9.8	95	SW	W	64	0.5	2	10.5
July	1,018.9	9.6	111	SW	W	70	0.3	2	13.3
August	1,018.9	9.7	100	SW	NE	98	1.3	2	13.5
September	1,017.8	10.1	102	SW	NE	128	2.7	2	12.4
October	1,016.1	10.6	100	SW	NE	152	4.1	3	8.3
November	1,014.2	11.1	111	SE	NE	168	5.6	3	5.8
December	1,012.1	11.4	127	SE	NE	193	6.5	3	4.5
Totals	..	..	..	..	..	**1,526**	**33.0**	**34**	**96.7**
Year Averages . . .	**1,015.9**	**10.5**	..	**SW**	**ENE**	..	..		..
Extremes . . .	..	..	**145**	..	..	..	..	..	

(*a*) Mean number of days when cloud cover equalled or exceeded seven-eighths. (*b*) Mean number of days when cloud cover was less than or equal to one eighth. (*c*) 1951–87. (*d*) Class-A Pan.

TEMPERATURE AND SUNSHINE

	Air temperature daily readings (°Celsius)			*Extreme air temperature (°Celsius)*				*Extreme temperature (°Celsius)*		*Mean daily hours*
Month	*Mean max.*	*Mean min.*	*Mean*	*Highest*		*Lowest*		*Lowest on grass*		*sunshine*
No. of years of record	99		99		99		99		98	77
January	29.4	20.8	25.0	43.2	26/40	14.9	4/93*	9.9	4/93*	7.6
February . . .	29.0	20.6	24.8	40.9	21/25	14.7	23/31	9.5	22/31	7.0
March	28.0	19.4	23.7	38.8	13/65	11.3	29/13	7.4	29/13	6.8
April	26.1	16.7	21.3	36.1	19/73	6.9	25/25	2.6	24/25	7.2
May	23.2	13.4	18.3	32.4	21/23	4.8	30/51	−1.2	8/97*	6.8
June	20.8	10.9	15.9	31.6	19/18	2.4	29/08	−3.7	23/88*	6.7
July	20.4	9.6	15.0	29.1	23/46	2.3	(*a*)	−4.5	11/90*	7.0
August	21.8	10.3	16.1	32.8	14/46	2.7	13/64	−2.7	9/99*	8.0
September . . .	24.0	12.9	18.5	38.3	22/43	4.8	1/96*	−0.9	1/89*	8.3
October	26.1	15.9	20.9	40.7	30/58	6.3	3/99*	1.6	8/89*	8.2
November . . .	27.8	18.2	22.9	41.2	18/13	9.2	2/05	3.8	1/05	8.2
December . . .	29.1	19.9	24.5	41.2	7/81	13.5	5/55	9.5	3/94*	8.2
Year Averages . .	**25.5**	**15.7**	**20.6**	..	..	..	..	..	..	**7.5**
Year Extremes .	..	..	..	**43.2**	**26/1/1940**	**2.3**	.. **(*a*)**	**−4.5**	**11/7/1890**	..

(*a*) 12/1894 and 2/1896.

CLIMATIC DATA: BRISBANE, QUEENSLAND—*continued*

(Lat.27° 28′ S., Long. 153° 2′ E. Height above M.S.L. 41 metres)

HUMIDITY, RAINFALL AND FOG

	Rel. hum. (%)		*Rainfall (millimetres)*					
Month	*9 a.m. mean*	*3 p.m. mean*	*Mean mthly*	*Mean No. of days of rain*	*Greatest monthly*	*Least monthly*	*Greatest in one day*	*Fog mean No. days*
No. of years of record	47	44	135	126	135	135	135	99
January	66	58	164	13	872 (1974)	8 (1919)	465 21/87*	0.5
February	70	60	161	14	1,026 (1893)	15 (1849)	270 6/31	0.5
March	71	59	143	15	865 (1870)	Nil (1849)	284 14/08	1.1
April	69	54	87	11	388 (1867)	1 (1944)	178 3/72	2.1
May	70	52	73	10	410 (1980)	Nil (1846)	149 9/80	2.9
June	70	51	68	8	647 (1967)	Nil (1847)	283 12/67	2.7
July	68	47	57	7	330 (1973)	Nil (*a*)	193 20/65	2.7
August	64	44	46	7	373 (1879)	Nil (*b*)	124 12/87*	3.3
September . . .	61	46	47	8	138 (1886)	(*c*) (1979, 80)	80 12/65	2.3
October	60	52	76	9	456 (1972)	(*c*) (1948)	136 25/49	1.2
November . . .	60	55	99	10	413 (1981)	Nil (1842)	143 8/66*	0.5
December . . .	62	57	130	12	441 (1942)	9 (1865)	168 28/71*	0.3
Totals . . .			**1,151**	**123**	..	..	.. ..	**20.0**
Year Averages . .	**66**	**53**	..	..	..	..	.. ..	
Extremes . .			..	..	**1,026 (2/1983)**	**Nil (Various)**	**465** **21/1/1887**	..

(*a*) 1841 and 1951. (*b*) 1862, 1869, 1880 and 1977. (*c*) Less than 1 mm.

NOTE: Figures such as 23/47, 4/93, etc. indicate, in respect of the month of reference, the day and year of the occurrence. Dates marked with an asterisk (*) relate to nineteenth century. Bracketed figures indicate year of occurrence.

CLIMATIC DATA: ADELAIDE, SOUTH AUSTRALIA

(Lat. 34° 46′ S., Long. 138° 35′ E. Height above M.S.L. 43 metres)

BAROMETER, WIND, EVAPORATION, THUNDER, CLOUDS AND CLEAR DAYS

		Wind (height of anemometer 22 metres)							
				Prevailing direction					
Month	*Mean of 9 a.m. and 3 p.m. atmospheric pressure reduced to mean sea level (hPa)*	*Average (km/h)*	*Highest gust speed (km/h)*	*9 a.m.*	*3 p.m.*	*Mean amount evaporation (mm)*	*Mean No. days thunder*	*Mean No. cloudy days(a)*	*Mean No. clear days(b)*
No. of years of record	121	(*c*)20	(*d*)63	(*d*)24	(*d*)24	(*e*)12	105	45	62
January	1,013.2	12.8	116	SW	SW	254	1.5	3	11.9
February	1,014.3	12.1	106	SSW	SW	216	1.1	3	10.8
March	1,017.2	11.4	126	NE	SW	180	0.8	4	10.7
April	1,019.9	11.4	130	NE	WSW	120	1.0	6	6.7
May	1,020.1	11.3	113	NE	WSW	79	1.0	7	4.5
June	1,019.9	11.6	108	NE	NW	56	0.9	7	3.8
July	1,020.8	11.8	148	NE	N	60	0.8	8	3.5
August	1,019.0	12.8	121	NE	W	78	1.1	6	4.6
September	1,017.7	13.2	111	NE	W	110	1.3	6	5.5
October	1,016.0	13.6	121	NE	WSW	164	1.9	6	5.6
November	1,015.0	13.9	130	SW	SW	196	2.0	5	6.5
December	1,013.3	13.5	121	WSW	SW	242	1.5	4	8.7
Totals	..	..	..	..	..	**1,751**	**14.9**	**65**	**82.6**
Year Averages . . .	**1,017.1**	..	..	**NE**	**SW**	..	..		..
Extremes . . .	..	..	**148**	..	..	..	..		..

(*a*) Mean number of days when cloud cover equalled or exceeded seven-eighths. (*b*) Mean number of days when cloud cover was less than or equal to one-eighth. (*c*) Records of cup anemometer. (*d*) 1955–1978. (*e*) Class-A Pan.

CLIMATIC DATA: ADELAIDE, SOUTH AUSTRALIA—*continued*

(Lat. 34° 46′ S., Long. 138° 35′ E. Height above M.S.L. 43 metres)

TEMPERATURE AND SUNSHINE

Month	*Air temperature daily readings (°Celsius)*			*Extreme air temperature (°Celsius)*				*Extreme temperature (°Celsius)*		*Mean daily hours sun-shine*
	Mean max.	*Mean min.*	*Mean*	*Highest*		*Lowest*		*Lowest on grass*		
No. of years of record	122	122	122		125		125		119	95
January	29.5	16.4	23.0	47.6	12/39	7.3	21/84*	1.8	3/77	10.0
February	29.3	16.6	23.0	45.3	12/99*	7.5	23/18	2.1	23/26	9.3
March	26.8	15.1	21.0	43.6	9/34	6.6	21/33	0.1	21/33	7.9
April	22.7	12.6	17.7	37.0	5/38	4.2	15/59*	−3.5	30/77	6.0
May	18.7	10.3	14.5	31.9	4/21	(*a*)1.5	22/85	−3.6	19/28	4.8
June	15.8	8.3	12.1	25.6	4/57	(*a*)−0.4	8/82	−6.1	24/44	4.2
July	15.0	7.3	11.1	26.6	29/75	0.0	24/08	−5.5	30/29	4.3
August	16.4	7.8	12.1	29.4	31/11	0.2	17/59*	−5.1	11/29	5.3
September	18.9	9.0	13.9	35.1	30/61	0.4	4/58*	−3.9	25/27	6.2
October	22.0	10.9	16.5	39.4	21/22	2.3	20/58*	−3.0	22/66	7.2
November	25.1	12.9	19.1	45.3	21/65*	4.9	2/09	−0.6	17/76	8.6
December	27.7	15.0	21.3	45.9	29/31	6.1	(*b*)	−1.0	19/76	9.4
Year **Averages** . .	**22.3**	**11.9**	**17.1**	. .	. .	. .	. .	. .	. .	**6.9**
Year **Extremes** . .	. .	. .	. .	**47.6**	**12/1/39**	**−0.4**	**24/7/08**	**−6.1**	**24/6/44**	

(*a*) Recorded at Kent Town (*b*) 16/1861 and 4/06.

HUMIDITY, RAINFALL AND FOG

Month	*Rel. hum. (%)*		*Rainfall (millimetres)*						*Fog mean No. days*
	9 a.m. mean	*3 p.m. mean*	*Mean mthly*	*Mean No. of days of rain*	*Greatest monthly*	*Least monthly*	*Greatest in one day*		
No. of years of record	122	111	140	140	140	140		140	77
January	42	34	20	4	84(1941)	Nil(*a*)	58	2/89*	0.0
February	45	35	21	4	155(1925)	Nil(*a*)	141	7/25	0.0
March	49	39	24	5	117(1878)	Nil(*a*)	89	5/78*	0.0
April	58	47	44	9	154(1971)	Nil(1945)	80	5/60*	0.0
May	69	57	68	13	197(1875)	3(1934)	70	1/53*	0.4
June	76	64	72	15	218(1916)	6(1958)	54	1/20	1.1
July	77	64	66	16	(*b*)160(1890)	10(1899)	44	10/65*	1.3
August	71	58	61	15	157(1852)	8(1944)	57	19/51*	0.6
September	62	52	51	13	148(1923)	7(1951)	40	20/23	0.2
October	53	45	44	11	133(1949)	1(1969)	57	16/08	0.0
November	46	39	31	8	113(1839)	1(1967)	75	12/60	0.0
December	43	36	26	6	101(1861)	Nil(1904)	61	23/13	0.0
Totals	. .	. .	**528**	**119**	. .	. .	. .	. .	**3.6**
Year **Averages** . .	**58**	**48**	. .	. .	. .	. .	. .	. .	. .
Extremes . .			. .	. .	**218(6/1916)**	Nil(*c*)	**141**	**7/2/25**	

(*a*) Various years. (*b*) Kent Town. (*c*) December to April, various years.

NOTE: Figures such as 3/55, 21/84, etc. indicate, in respect of the month of reference, the day and year of the occurrence. Dates marked with an asterisk(*) relate to nineteenth century.

In February, 1977, the Adelaide Regional Office of the Bureau of Meteorology moved from West Terrace to Kent Town. Averages presented in this table are calculated from the observations recorded at West Terrace. Extremes recorded at Kent Town are marked. Bracketed figures indicate year of occurrence.

CLIMATIC DATA: PERTH, WESTERN AUSTRALIA

(Lat. 31° 57′ S., Long. 115° 51′ E. Height above M.S.L. 19.5 metres)

BAROMETER, WIND, EVAPORATION, THUNDER, CLOUDS AND CLEAR DAYS

		Wind (height of anemometer 22 metres)							
Month	*Mean of 9 a.m. and 3 p.m. atmospheric pressure reduced to mean sea level (hPa)*	*Average (km/h)*	*Highest gust speed (km/h)*	*Prevailing direction 9 a.m.*	*Prevailing direction 3 p.m.*	*Mean amount evaporation (mm)*	*Mean No. days thunder*	*Mean No. cloudy days(a)*	*Mean No. clear days(b)*
No. of years of record	94	(*c*)30	68	(*c*)30	(*c*)30	(*d*)12	82	45	(*c*)30
January	1,012.6	17.5	81	E	SSW	285	0.9	2	14
February	1,013.0	17.2	113	ENE	SSW	242	0.7	2	13
March	1,015.2	16.2	113	E	SSW	213	0.7	2	12
April	1,017.9	13.7	130	ENE	SSW	132	0.9	5	9
May	1,017.9	13.5	119	NE	WSW	94	1.7	6	6
June	1,017.6	13.5	129	N	NW	69	1.8	7	5
July	1,018.8	14.2	137	NNE	W	75	1.5	6	5
August	1,018.8	15.1	156	N	WNW	87	1.3	5	6
September	1,018.4	15.1	109	ENE	SSW	118	0.7	4	8
October	1,017.0	16.1	105	SE	SW	173	0.7	3	8
November	1,015.5	17.2	101	E	SW	216	0.8	3	9
December	1,013.4	17.7	103	E	SSW	275	0.9	2	13
Year **Totals** . . .	. .	. .	. .	. .	. .	**1,979**	**12.6**	**47**	**108**
Year **Averages** . . .	**1,016.4**	**15.6**	. .	**E**	**SSW**	. .	. .		. .
Year **Extremes** . .	. .	. .	**156**	. .	. .	. .	. .		. .

(*a*) Mean number of days when cloud cover equalled or exceeded seven-eighths. (*b*) Mean number of days when cloud cover was less than or equal to one eighth. (*c*) Standard thirty years normal (1911-1940). (*d*) Class-A Pan.

TEMPERATURE AND SUNSHINE

	Air temperature daily readings (°Celsius)			*Extreme air temperature (°Celsius)*				*Extreme temperature (°Celsius)*		
Month	*Mean max.*	*Mean min.*	*Mean*	*Highest*		*Lowest*		*Lowest on grass*		*Mean daily hours sunshine*
No. of years of record	85	85	85		85		85		84	81
January	29.6	17.7	23.5	44.7	12/78	9.2	20/25	4.2	20/25	10.5
February . . .	29.9	17.9	23.7	44.6	8/33	8.7	1/02	4.3	1/13	10.1
March	27.8	16.6	22.2	41.3	14/22	7.7	8/03	2.6	(*a*)	9.0
April	24.5	14.1	19.2	37.6	9/10	4.1	20/14	−0.7	26/60	7.4
May	20.7	11.6	16.1	32.4	2/07	1.3	11/14	−3.9	31/64	5.9
June	18.2	9.9	14.1	28.1	5/75	1.6	22/55	−3.4	27/46	4.9
July	17.3	9.0	13.2	26.3	17/76	1.2	7/16	−3.8	30/20	5.3
August	17.9	9.1	13.5	27.8	21/40	1.9	31/08	−3.0	18/66	6.2
September . . .	19.4	10.1	14.8	32.7	30/18	2.6	6/56	−2.7	(*b*)	7.2
October	21.2	11.5	16.3	37.3	29/67	4.2	6/68	−1.2	16/31	8.3
November . . .	24.6	14.0	19.2	40.3	24/13	5.6	1/04	−1.1	6/71	9.7
December . . .	27.3	16.2	21.7	42.3	31/68	8.6	29/57	3.3	29/57	10.6
Year **Averages**	**23.2**	**13.1**	**18.2**	. .	. . .	. .	. .	. .	. .	**7.9**
Year **Extremes**	. .	. .	. .	**44.7**	**12/1/78**	**1.2**	**7/7/16**	**−3.9**	**31/5/64**	. .

(*a*) 8/1903 and 16/1967. (*b*) 8/1952 and 6/1956.

CLIMATIC DATA: PERTH, WESTERN AUSTRALIA—*continued*

(Lat. 31° 57′ S., Long. 115° 51′ E. Height above M.S.L. 19.5 metres)

HUMIDITY, RAINFALL AND FOG

	Rel. hum. (%)		*Rainfall (millimetres)*					
Month	*9 a.m. mean*	*3 p.m. mean*	*Mean mthly*	*Mean No. of days of rain*	*Greatest monthly*	*Least monthly*	*Greatest in one day*	*Fog mean No. days*
No. of years of record	44	44	106	102	106	106	102	79
January	50	41	8	3	55(1879)	Nil(*a*)	44 27/79*	0.2
February	53	40	12	3	166(1955)	Nil(*a*)	87 17/55	0.3
March	57	42	20	4	145(1934)	Nil(*a*)	77 9/34	0.6
April	65	49	45	8	149(1926)	Nil(1920)	67 30/04	0.9
May	72	53	124	14	308(1879)	14(1964)	76 17/42	1.3
June	78	60	183	17	476(1945)	55(1877)	99 10/20	1.4
July	78	60	174	18	425(1958)	61(1876)	76 4/91*	1.6
August	74	57	137	17	318(1945)	12(1902)	74 14/45	1.0
September	68	54	80	14	199(1923)	9(1916)	47 18/66	0.3
October	59	49	55	11	200(1890)	1(1969)	55 1/75	0.4
November	54	46	21	6	71(1916)	Nil1891	39 29/56	0.2
December	51	44	14	4	81(1951)	Nil(*a*)	47 3/51	0.2
Totals			**873**	**119**	..	..	.. ..	**8.1**
Year Averages	**63**	**50**	..	..	..	..	.. ..	..
Extremes			..	..	**476(6/1945)**	Nil(*a*)	**99** 10/6/20	

(*a*) Various years.

NOTE: Figures such as 26/76, 29/56, etc. indicate, in respect of the month of reference, the day and year of the occurrence. Dates marked with an asterisk(*) relate to nineteenth century. Bracketed figures indicate year of occurrence.

CLIMATIC DATA: HOBART, TASMANIA

(Lat. 42°53′S., Long. 147°20′E. Height above M.S.L. 54 metres)

BAROMETER, WIND, EVAPORATION, THUNDER, CLOUDS AND CLEAR DAYS

		Wind (height of anemometer 12 metres)							
				Prevailing direction					
Month	*Mean of 9 a.m. and 3 p.m. atmospheric pressure reduced to mean sea level (hPa)*	*Average (km/h)*	*Highest gust speed (km/h)*	*9 a.m.*	*3 p.m.*	*Mean amount evaporation (mm)*	*Mean No. days thunder*	*Mean No. cloudy days(a)*	*Mean No. clear days(b)*
No. of years of record	99	76	96	(*c*)30	(*c*)30	(*d*)11	75	42	(*c*)30
January	1,010.6	12.7	130	NNW	SSE	142	1.0	10	1.9
February	1,012.9	11.7	121	NNW	SSE	123	0.9	9	2.3
March	1,014.3	11.1	127	NW	SSE	92	0.8	11	2.4
April	1,015.5	11.0	141	NW	W	59	0.3	11	1.7
May	1,015.5	10.8	135	NNW	NW	36	Nil	13	2.4
June	1,015.4	10.2	132	NW	NW	20	Nil	11	2.4
July	1,014.1	10.9	129	NNW	NNW	24	Nil	10	2.0
August	1,012.8	11.1	140	NNW	NW	43	Nil	11	2.1
September	1,011.4	12.5	150	NNW	NW	59	0.1	10	1.5
October	1,010.5	12.6	140	NNW	SW	90	0.4	12	1.0
November	1,009.9	12.8	135	NNW	S	121	0.6	12	1.3
December	1,009.4	12.5	122	NNW	SSE	144	0.8	12	1.1
Totals	..	..	..	..	..	**953**	**4.9**	**132**	**22.1**
Year Averages	**1,012.7**	**11.7**	..	**NNW**	**W**	..	..		..
Extremes	..	..	**150**	..	..	..	..	..	

(*a*) Mean numbers of days when cloud equalled or exceeded seven-eighths. (*b*) Mean number of days when cloud cover was less than or equal to one-eighth. (*c*) Standard thirty years normal (1911-1940). (*d*) Class-A Pan with Bird Guard.

CLIMATIC DATA: HOBART, TASMANIA—*continued*

(Lat. 42°53′S., Long. 147°20′E. Height above M.S.L. 54 metres)

TEMPERATURE AND SUNSHINE

Month	*Air temperature daily readings (°Celsius)* Mean max.	Mean min.	Mean	*Extreme air temperature (°Celsius)* Highest		Lowest		*Extreme temperature (°Celsius)* Lowest on grass		*Mean daily hours sunshine*
No. of years of	101	101	101		101		101		99	75
January	21.5	11.7	16.5	40.8	4/76	4.5	9/37	−0.8	19/97*	7.7
February	21.6	11.9	16.7	40.2	12/99*	3.4	10/80*	−2.0	—/87*	6.9
March	20.0	10.7	15.2	37.3	13/40	1.8	31/26	−2.5	30/02	6.2
April	17.1	8.8	12.9	30.6	1/41	0.6	14/63	−3.9	—/86*	5.0
May	14.9	6.8	10.5	25.5	5/21	−1.6	30/02	−6.7	19/02	4.2
June	11.8	5.1	8.5	20.6	1/07	−2.8	25/72	−7.7	24/63	3.8
July	11.5	4.4	7.9	21.0	30/75	−2.8	11/81	−7.5	1/78	4.2
August	12.9	5.1	9.1	24.5	26/77	−1.8	5/62	−6.6	7/09	4.9
September	14.9	6.3	10.6	28.2	29/73	−0.6	16/97*	−7.6	16/26	5.7
October	16.9	7.6	12.2	33.4	24/14	0.0	12/89*	−4.6	(*a*)	6.3
November	18.5	9.1	13.8	36.8	26/37	1.6	16/41	−3.4	1/08	6.9
December	20.2	10.6	15.4	40.7	30/97*	3.3	3/06	−2.6	—/86*	7.2
Year **Averages**	**16.8**	**8.2**	**12.4**	..	..	..	..	..	..	**5.8**
Year **Extremes**	..	..	..	**40.8**		**−2.8**		**−7.7**		..
					4/1/1976		**11/7/81** **and** **25/6/72**		**24/6/1963**	

(*a*) 1/1886 and 1/1899.

HUMIDITY, RAINFALL AND FOG

Month	*Rel. hum. (%)* 9 a.m. mean	3 p.m. mean	*Rainfall (millimetres)* Mean mthly	Mean No. of days of rain	Greatest monthly	Least monthly	Greatest in one day		Fog mean No. days
No. of years of record	86	86	105	105	101	101		101	73
January	59	53	48	11	150(1893)	4(1958)	75	30/16	0.1
February	63	55	40	10	171(1964)	3(1914)	56	1/54	Nil
March	66	55	47	11	255(1946)	7(1943)	88	17/46	0.2
April	70	59	53	12	248(1960)	2(1904)	132	23/60	0.3
May	76	63	49	14	214(1958)	4(1913)	47	3/73	1.2
June	79	68	57	14	238(1954)	2(1979)	147	7/54	1.6
July	78	66	53	15	157(1974)	4(1950)	64	18/22	1.3
August	74	60	52	15	161(1946)	8(1892)	65	2/76	0.6
September	66	56	53	15	201(1957)	10(*a*)	156	15/57	0.2
October	62	56	63	16	193(1947)	9(1982)	66	4/06	0.1
November	60	55	56	14	188(1885)	9(*b*)	94	30/85*	0.1
December	59	58	57	13	206(1985)	5(*c*)	85	5/41	0.1
Year **Totals**			**628**	**160**	..	..	..	..	**5.8**
Year **Averages**	**68**	**59**	..	..	..	..	..	..	..
Year **Extremes**			..	..	**255(3/1946)**	**2(*d*)**	**156**		..
								15/9/57	

(*a*) 1891 and 1951. (*b*) 1919 and 1921. (*c*) 1897, 1915 and 1931. (*d*) 4/1904 and 6/1979.

NOTE: Figures such as 30/16, 12/99, etc. indicate, in respect of the month of reference, the day and year of the occurrence. Dates marked with an asterisk(*) relate to nineteenth century. Bracketed figures indicate year of occurrence.

CLIMATIC DATA: DARWIN AIRPORT, NORTHERN TERRITORY

(Lat. 12°25'S., Long. 130°52'E. Height above M.S.L. 31 metres)

BAROMETER, WIND, EVAPORATION, THUNDER, CLOUDS AND CLEAR DAYS

Month	Mean of 9 a.m. and 3 p.m. atmospheric pressure reduced to mean sea level (hPa)	Wind (height of anemometer 36 metres)				Mean amount evaporation (mm)	Mean No. days thunder	Mean No. cloudy days(a)	Mean No. clear days(b)
		Average (km/h)	Highest gust speed (km/h)	Prevailing direction 9 a.m.	Prevailing direction 3 p.m.				
No. of years of record	95	45	(c)29			(d)13	45	45	45
January	1,006.4	9.7	100	W	NW	185	15	21	0
February	1,006.4	11.1	96	W	NW	162	11	19	0
March	1,007.6	9.3	107	W	NW	172	11	16	1
April	1,009.6	9.7	117	SE	NW	189	4	9	4
May	1,010.9	10.5	63	SE	E	200	0	5	9
June	1,012.6	10.7	67	SE	E	189	0	3	13
July	1,013.1	9.7	61	SE	E	201	0	3	16
August	1,012.6	9.7	65	SE	NW	203	0	2	15
September	1,012.1	11.0	67	ENE	NW	232	1	2	11
October	1,010.6	10.9	96	NE	NW	254	5	4	6
November	1,008.7	9.1	117	NW	NW	230	12	8	2
December	1,007.4	9.7	217	NW	NW	205	15	15	0
Year **Totals**	..	..	..	..	..	**2,422**	**74**	**105**	**77**
Year **Averages**	**1,009.8**	**10.1**	..	**SE**	**NW**	..	..		..
Year **Extremes**	..	..	**217**	..	..	..	..	..	

(a) Mean number of days when cloud cover equalled or exceeded seven-eighths. (b) Mean number of days when cloud cover was less than or equal to one-eighth. (c) Several incomplete years. (d) Class-A Pan.

TEMPERATURE AND SUNSHINE

Month	Air temperature daily readings (°Celsius)			Extreme air temperature (°Celsius)				Extreme temperature (°Celsius)	Mean daily hours sunshine
	Mean max.	Mean max.	Mean	Highest		Lowest		Lowest on grass	
No. of years of record	45	45	45		(a)100		(a)100		31
January	31.7	24.7	28.2	37.8	2/82*	20.0	20/92*	..	5.6
February	31.4	24.6	28.0	38.3	20/87*	17.2	25/49	..	5.9
March	31.8	24.4	28.1	38.9	(b)	19.2	31/45	..	6.6
April	32.6	23.9	28.3	40.0	7/83*	16.0	11/43	..	8.7
May	31.9	21.9	26.9	39.1	8/84*	14.2	28/67	..	9.5
June	30.4	19.8	25.1	39.0	17/37	12.1	23/63	..	9.9
July	30.3	19.2	24.8	36.7	17/88*	10.4	29/42	..	10.1
August	31.2	20.6	25.9	37.0	30/71*	13.6	11/63	..	10.2
September	32.4	23.0	27.7	38.9	20/82*	16.7	9/63	..	9.8
October	33.0	24.9	29.0	40.5	17/92*	19.4	8/66	..	9.4
November	33.1	25.2	29.2	39.6	9/84*	19.3	4/50	..	8.4
December	32.5	25.2	28.9	38.9	20/82*	18.3	4/60	..	7.2
Year **Averages**	**31.9**	**23.1**	**27.5**	..	..	..	..	..	**8.4**
Year **Extremes**	..	..	..	**40.5**	17/10/1892	**10.4**	29/7/1942		..

(a) Years 1882-1941 at Post Office; 1942-1981 at Aerodrome; 1967-1973 at Regional office; sites not strictly comparable. (b) 26/1883 and 27/1883.

CLIMATIC DATA: DARWIN AIRPORT, NORTHERN TERRITORY—*continued*

(Lat. 12°25′S., Long. 130°52′E. Height above M.S.L. 31 metres)

HUMIDITY, RAINFALL AND FOG

	Rel. hum. (%)		*Rainfall (millimetres)*						
Month	*9 a.m. mean*	*3 p.m. mean*	*Mean mthly*	*Mean No. of days of rain*	*Greatest monthly*	*Least monthly*	*Greatest in one day*		*Fog mean No. days*
No. of years of record	41	41	45	45	116(*a*)	45		116(*a*)	45
January	82	70	409	21	906(1981)	136(1965)	296	7/97*	Nil
February	84	72	355	20	815(1969)	103(1959)	250	18/55	Nil
March	83	67	316	19	1,014(1977)	88(1978)	241	16/77	Nil
April	75	52	99	9	357(1953)	1(1946)	143	4/59	Nil
May	67	43	17	2	299(1968)	Nil(*b*)	58	23/79	Nil
June	63	39	2	Nil	41(1973)	Nil(*b*)	36	10/02	Nil
July	64	38	1	Nil	10(1955)	Nil(*b*)	43	12/00	1
August	68	41	6	1	84(1947)	Nil(*b*)	80	2/47	1
September	71	48	18	2	130(1981)	Nil(*b*)	71	21/42	Nil
October	71	53	72	6	339(1954)	Nil(1953)	95	28/56	Nil
November	74	59	142	12	371(1964)	17(1976)	120	19/51	Nil
December	77	65	224	16	665(1974)	56(1961)	277	25/74	Nil
Totals			**1,661**	**108**	..	..	..	..	**2**
Year Averages	**73**	**54**	..	..	..	..	..	..	..
Extremes			..	..	**1,014(3/77)**	**Nil(*c*)**	**296**	7/1/1897	..

(*a*) Highest or lowest at either Post Office, Aerodrome or Regional Office Sites. Regional Office (1964-1973). (*b*) Various years. (*c*) April to October. Various years.

NOTE: Figures such as 2/82, 26/42, etc, indicate, in respect of the month of reference, the day and year of occurrence. Dates marked with an asterisk (*) relate to nineteenth century. Bracketed figures indicate year of occurrence.

CLIMATIC DATA: CANBERRA, AUSTRALIAN CAPITAL TERRITORY

(Lat. 35° 19′ S., Long. 149° 11′ E. Height above M.S.L. 577 metres)

BAROMETER, WIND, EVAPORATION, THUNDER, CLOUDS AND CLEAR DAYS

		Wind (height of anemometer 10 metres)							
				Prevailing direction					
Month	*Mean of 9 a.m. and 3 p.m. atmospheric pressure reduced to mean sea level (hPa)*	*Average (km/h)*	*Highest gust speed (km/h)*	*9 a.m.*	*3 p.m.*	*Mean amount evaporation (mm)*	*Mean No. days thunder*	*Mean No. cloudy days(a)*	*Mean No. clear days(b)*
No. of years of record	35	(*c*)23	47	43	43	(*d*)20	47	47	47
January	1,012.1	6.1	121	NW	NW	259	3.9	8	7.3
February	1,013.8	5.3	104	SE	NW	205	3.5	8	6.1
March	1,016.1	4.7	111	SE	NW	172	1.9	9	6.8
April	1,018.9	4.2	106	NW	NW	109	1.1	7	6.7
May	1,019.9	4.5	104	NW	NW	70	0.5	9	6.6
June	1,020.9	4.2	96	NW	NW	48	0.2	10	6.2
July	1,020.4	4.9	102	NW	NW	53	0.1	8	7.1
August	1,018.5	5.6	113	NW	NW	79	0.8	8	6.7
September	1,017.4	6.0	107	NW	NW	110	1.5	8	7.6
October	1,015.1	6.4	121	NW	NW	157	2.5	9	5.9
November	1,012.7	6.6	128	NW	NW	195	3.5	9	5.1
December	1,011.0	6.8	106	NW	NW	261	3.7	8	6.7
Totals	..	..	..	..	..	**1,718**	**23.2**	**101**	**78.8**
Year Averages	**1,016.4**	**5.4**	..	**NW**	**NW**	..	..	..	**6.6**
Extremes	..	..	**128**	..	..	..	..	..	..

(*a*) Mean number of days when cloud cover equalled or exceeded seven-eighths. (*b*) Mean number of days when cloud cover was less than or equal to one-eighth. (*c*) Recorded at Yarralumla, where a cup anemometer was installed up to 1980. (*d*) Class-A Pan.

CLIMATIC DATA: CANBERRA, AUSTRALIAN CAPITAL TERRITORY—*continued*

(Lat. 35° 19′ S., Long. 149° 11′ E. Height above M.S.L. 577 metres)

TEMPERATURE AND SUNSHINE

	Air temperature daily readings (°Celsius)			*Extreme air temperature (°Celsius)*				*Extreme temperature (°Celsius)*		*Mean daily hours sun-shine*
Month	*Mean max.*	*Mean min.*	*Mean*	*Highest*		*Lowest*		*Lowest on grass*		
No. of years of record	47	47	47		47		47		36	12(*a*)
January	27.7	12.9	20.3	41.4	31/68	1.8	1/56	−0.4	1/56	9.7
February . . .	26.9	12.9	19.9	42.2	1/68	3.0	16/62	−0.5	9/80	9.3
March	24.4	10.7	17.5	36.5	8/83	−1.1	24/67	−4.0	(*b*)	7.8
April	19.6	6.5	13.1	32.6	(*c*)	−3.6	(*d*)	−8.3	24/69	7.3
May	15.1	2.9	9.0	24.5	10/67	−7.5	30/76	−11.0	17/79	5.5
June	12.0	0.8	6.4	20.1	3/57	−8.5	8/57	−13.4	25/71	5.4
July	11.1	−0.3	5.4	19.7	29/75	−10.0	11/71	−15.1	11/71	5.7
August	12.8	0.8	6.8	24.0	30/82	−7.8	6/74	−13.0	3/79	6.7
September . . .	15.9	2.9	9.4	28.6	26/65	−6.4	10/82	−10.7	10/82	7.3
October	19.1	5.9	12.5	32.7	13/46	−3.3	4/57	−7.0	1/82	8.3
November . . .	22.5	8.4	15.5	38.8	19/44	−1.8	28/67	−6.3	28/67	8.9
December . . .	26.0	11.1	18.5	38.8	21/53	1.1	18/64	−3.9	18/64	9.3
Year Averages	**19.4**	**6.3**	**12.9**	..	..	..	..	..	..	**7.6**
Year Extremes	..	..	..	(*e*)**42.2**	**1/2/68**	**−10.0**	**11/7/71**	**−15.1**	**11/7/71**	..

(*a*) Composite of Airport and city. (*b*) 30/58 and 24/67. (*c*) 12/68 and 4/86. (*d*) 27 and 28/78. (*e*) Acton 42.8 on 11/1/39.

HUMIDITY, RAINFALL AND FOG

	Rel. hum. (%)		*Rainfall (millimetres)*						
Month	*9 a.m. mean*	*3 p.m. mean*	*Mean mthly*	*Mean No. of days of rain*	*Greatest monthly*	*Least monthly*	*Greatest in one day*		*Fog mean No. days*
No. of years of record	47	47	47	47	47	47		47	47
January	60	34	60	8	185(1984)	1(1947)	95	12/45	1.0
February	66	39	57	7	148(1977)	Nil(1968)	69	20/74	1.0
March	68	41	54	7	312(1950)	1(1954)	92	21/78	2.7
April	75	46	50	8	164(1974)	1(1980)	75	2/59	4.1
May	81	55	48	9	150(1953)	Nil(1982)	96	3/48	7.8
June	84	60	37	9	126(1956)	4(1979)	45	25/56	8.1
July	84	58	39	10	104(1960)	4(*a*)	35	10/57	7.8
August.	78	53	49	12	156(1974)	7(1944)	48	29/74	5.2
September . . .	72	49	52	11	151(1978)	6(1946)	43	8/78	3.9
October	65	47	69	11	161(1976)	2(1977)	105	21/59	3.0
November. . . .	60	40	62	9	135(1961)	Nil(1982)	68	19/86	1.3
December. . . .	57	34	49	8	215(1947)	Nil(1967)	87	30/48	0.7
Year Totals . . .			**626**	**109**	.. ..	.. ..	..	..	**46.6**
Year Averages . .	**71**	**46**	..	..	.. ..	.. ..	..	..	..
Year Extremes . .	..	..	..	..	**312(3/50)**	**Nil(b)**	**105** **21/10/59**		..

(*a*) 1970 and 1982 (*b*) 12/67, 2/68, 5/82 and 11/82.

NOTE: Data shown in the above tables relate to the Canberra Airport Meteorological Office, except where otherwise indicated, and cover years up to 1987.

Figures such as 24/33, 31/68, etc. indicate, in respect of the month of reference, the day and year of the occurrence. Bracketed figures indicate year of occurrence.

METEOROLOGY IN AUSTRALIA

(This special article has been contributed by the Bureau of Meteorology)

> *In our present complex civilisation, when interests are so inter-involved and world-wide, the discovery and formulation of laws governing the weather are of first importance. To obtain an accurate meteorological system throughout Australia, the Government would be justified in incurring almost any expenditure. To all sections of the community the matter is of great importance—to those interested in commerce, in transportation, navigation, agriculture and trade of all descriptions. In short, it concerns everybody whose living and comfort depend on the weather.*
>
> (*Hansard*, House of Representatives, 1 August 1906)

These prophetic words were spoken during the debate on the Meteorology Bill in the Australian Parliament, itself only five years old. The Bill led to the establishment of the Commonwealth Bureau of Meteorology, which began operations as Australia's national meteorological authority on 1 January 1908.

Our first weathermen

The first observations of weather conditions around Australia by Europeans were made by Cook, Dampier and other early navigators. However, the first land-based observations were made by William Dawes, a lieutenant in the Royal Marines who arrived with the First Fleet in 1788. Dawes built an observatory at Sydney Cove and for the next three years kept daily records of wind, temperature, pressure and rainfall.

From 1800 onwards the expansion of weather information was directly related to the exploration of Australia. Men like Mitchell, Oxley, Blaxland, Lawson and Wentworth all compiled valuable weather records as they pushed back the frontiers of settlement.

Official observations in Sydney began in 1859. Activities flourished under the guidance of H. C. Russell, Government Astronomer from 1879 to 1905 who prepared Australia's first newspaper weather map, published in 1877, and initiated the publication of daily weather maps from 1879.

Melbourne's first observatory was built at Williamstown in 1854. Two years later a Bavarian scientist, Georg von Neumayer, established an observatory at Flagstaff Hill and organised a number of observing stations throughout Victoria.

Impetus to the South Australian meteorological service was given by the appointment in 1855 of Sir Charles Todd as the Director of the Adelaide Observatory. Todd was responsible for the construction of the Adelaide-Darwin overland telegraph, and a duty of all his telegraph operators was to observe and dispatch weather reports.

Perhaps the most colourful of the early Australian meteorologists was Clement Wragge, Queensland Government Meteorologist from 1887 to 1903. A man of great energy and enthusiasm, Wragge established a network of observing stations throughout Queensland and pioneered the practice of naming cyclones.

Few countries in the world, therefore, can claim as rich a heritage of foresight, wisdom and dedication on the part of their early meteorologists as can Australia. In just over 100 years after the first European settlements, an observing network over an area larger than Europe had been established, a system of preparing daily weather charts and issuing forecasts had been initiated, and a significant bank of meteorological data had been accumulated.

The Bureau of Meteorology

Victoria and Tasmania: Generally fine with rising temperatures . . . . . .
New South Wales: Isolated thunderstorms on the coast, chiefly north of Sydney . . . . . .
Queensland: Showers and thunder over northern parts . . . . . .
South Australia: Generally fine and warm to hot with northerly winds . . . . . .
Western Australia: Generally fine, hot in the north, cooler on the SW Coast . . . . . .
Ocean: Gales, heavy rains and rough seas off the Queensland coast . . . . . .

These forecasts for 1 January 1908 were prepared by the first Commonwealth Meteorologist, H. A. Hunt. They were published in the press, transmitted by morse code to various country centres, and indicated by a system of flags on tall buildings in metropolitan areas.

Early services consisted of one daily forecast for the States, metropolitan areas and oceans. Although it operated Australia-wide the Bureau for many years worked with very limited staff and resources. Despite this, there were several notable achievements in its early history:

1913—staffing of Macquarie Island meteorological station as a base for Mawson's Antarctic expedition;

1921—establishment of an observing station on remote Willis Island in the Coral Sea;

1924—introduction of radio weather forecasts;

1934—establishment of a meteorological office in Darwin, initially for the London to Melbourne Centenary Air Race.

The threat of war in the late 1930s saw a marked increase in the requirements for meteorological services. Staff numbers jumped dramatically, and training courses for meteorologists and observers were introduced. In 1941 the Bureau was incorporated in the Royal Australian Air Force for the duration of the War.

The post-war period was one of great expansion in the Bureau. It was an era that saw the first use of radar for upper wind measurement (1948), Australia become one of the first members of the World Meteorological Organization (WMO) (1950), the start of continuous meteorological observations at Mawson Station in Antarctica (1954), the first television weather broadcast (1956), the first automatic weather station (1962), reception of the first TIROS satellite picture (1964), introduction of computers (1968), the beginning of regular transmissions from the Japanese geostationary satellite (1978), and introduction of a computerised communications system (1979).

Today the Bureau issues some 3,000 forecasts and warnings each day to the general community and a wide range of special users. Weather information is provided to the public through 136 radio stations and 50 television stations, and all metropolitan and many country newspapers. In addition, about 12 million calls are made each year by the public to recorded weather information services. Forecasts and other weather information are also provided on a daily basis to the aviation industry, defence services, shipping, primary producers, offshore oil rigs, and a range of other commercial interests.

In all, the Bureau issues more than one million forecasts and warnings each year, provides more than one million aviation briefing and documentation services, and handles about half a million queries and consultations on weather forecasts and current information.

The Bureau maintains Regional Forecasting Centres in each capital city and briefing offices at most major airports and RAAF bases throughout Australia. In preparing their forecasts and warnings the Regional Forecasting Centres are supported by analyses and prognoses of the larger-scale weather patterns over the Southern Hemisphere and the tropics, produced by the Bureau's National Meteorological Centre in Melbourne, and a tropical centre in Darwin. The National Meteorological Centre also serves as one of three World Meteorological Centres (the other two are in Washington and Moscow) of the WMO World Weather Watch system.

One of the most important tasks of the Bureau is to provide warnings of dangerous weather conditions. These include tropical cyclones, floods, gales, thunderstorms, cold snaps and fire weather.

Tropical Cyclone Warning Centres are maintained in Brisbane, Darwin and Perth to locate and track tropical cyclones threatening the Australian region. The Centres are supported by a network of radar-equipped observing stations, offshore automatic weather stations, and ship and aircraft reports. In addition, the ability of meteorological satellites to pinpoint the tell-tale spiral of a cyclone means that no cyclone now goes undetected.

The Bureau operates similar specially manned centres in times of floods and bushfires to warn the public and emergency organisations.

Observations

Since its establishment the Bureau has been faced with the problem of obtaining adequate observations over a vast continent—equal in area to Europe or the USA—only thinly populated and surrounded by data-sparse oceans.

Over the years it has built up a network of more than 60 Bureau-staffed stations, covering the continent and including the Antarctic and islands in the Pacific and Indian Oceans. Radar or radio-tracked balloons are used to measure wind, temperature and humidity at various levels into the stratosphere.

In addition to regular pictures of cloud imagery, polar-orbiting satellites have the capacity to sound the atmosphere, thereby providing data on temperature, moisture content and wind values at various levels above the earth's surface.

Australia's national satellite system holds great promise for meteorology through improvements in the dissemination of forecasts and collection of data from remote outback areas and unmanned weather stations. Consideration is being given to inclusion of meteorological sensors to provide forecasts with additional weather data to complement regular cloud imagery.

The Bureau-staffed network is augmented by over 400 part-time observers who provide surface weather reports several times a day, and an army of 6,000 volunteers who provide the Bureau with monthly rainfall totals. A fleet of more than 80 selected ships also radio valuable weather data to the Bureau when they are operating in Australian waters.

Technological advances of recent years have done much to overcome the long-standing problems posed by Australia's physical size and location. In addition to the Japanese Geostationary Meteorological Satellite (GMS), which provides three-hourly pictures day and night from its vantage point 36,000 kilometres above the equator, there are American and Russian satellites in polar orbit which transmit more detailed but less frequent pictures as they pass over the Australian region. The satellites' electronics also enable them to receive and transmit weather data from remote automatic weather stations, drifting ocean buoys, and from wide-bodied jet aircraft fitted with instruments to record and transmit weather data automatically during flight.

Climatological data service

'An important national asset . . . '—that's the description frequently applied to the Bureau's climatological information service. The ever-growing bank of weather data, coupled with powerful computers, enables the Bureau to provide a speedy, comprehensive climatological service to many sectors of the community—researchers in government, private industry and research institutions, atmospheric scientists, and the general public. The data include surface observations, radiation, rainfall, evaporation and upper-air measurements. Rainfall records, which form part of the data bank, have been collected for more than 100 years at some locations.

Climatological data have many applications in today's world. These include:

- urban and regional planning, such as siting of factories to minimise pollution;
- design and construction of mining townships in remote areas;
- dam construction and other water resource projects;
- assessing the need for air-conditioning;
- planning, siting and construction of airports;
- analysis of results of research projects in which weather is a factor;
- climate monitoring, including assessment of drought;
- meteorological research;
- certification of records for legal purposes.

International activities

Australia has played a leading part in the activities of the WMO since its formation in 1950. Bureau officers are members of many of the WMO bodies responsible for fostering the application of meteorology to aviation, shipping and agriculture, and encouraging world-wide co-operation in the establishment and maintenance of observing networks, standardisation of observational methods and the international exchange of data.

The Bureau's observations and telecommunications programs form part of the global system of the WMO World Weather Watch, and the World Meteorological Centre in Melbourne—together with centres in Washington and Moscow—provides a wide range of products for international users.

Australia also has a number of co-operative arrangements in meteorology with other countries. Training courses are provided for overseas students, and the Bureau participates in the programs of the Australian Development Assistance Bureau. One such project involves the secondment of a number of Bureau officers to Saudi Arabia under government to government agreement, to provide management and supervisory assistance in developing the Saudi meteorological service. Another involves assistance to the Solomon Islands service through new and upgraded equipment, consumables, staff training and general scientific and technical support.

Research

The Bureau has been responsible for meteorological research since its establishment in 1908. One of the first products of this research was a landmark publication in 1913 titled *Climate and Weather of Australia*, compiled by the then Commonwealth Meteorologist, H. A. Hunt, and two other distinguished meteorologists, Griffith Taylor and E. T. Quale.

In the following years, the Bureau's research was aimed largely at meeting the needs of operating a daily weather service. This research received a major boost during the period following World War II, when more highly qualified staff and a much improved data base became available.

The 1950s saw the establishment of a special Research and Development Division in the Bureau, and in 1965 in collaboration with the Academy of Science, the Bureau established the International Antarctic Meteorological Research Centre in Melbourne. Much research, however, was still undertaken by meteorologists engaged in operational forecasting, and related to their needs of servicing agricultural and maritime users, and issuing flood warnings and fire-weather information.

It was not until the advent of computers and the development of numerical modelling in the 1960s that research activities adopted a more specialised approach. In 1969 the Bureau joined with the CSIRO to form the Commonwealth Meteorology Research Centre (later Australian Numerical Meteorology Research Centre) which made a major contribution to the development of numerical meteorology at the international level, particularly in connection with the Global Weather Experiments of 1979.

The Bureau of Meteorology Research Centre was established in 1985 following a rationalisation of meteorological research in CSIRO and the Bureau. Its main objectives are to advance the science of meteorology, with particular emphasis on the Southern Hemisphere and the Australian region, and to support the Bureau's services by the development of operational techniques and the provision of scientific advice for other units in the Bureau.

Present and proposed research activities include:

- the development of forecasting systems for short-range (0–36 hours), medium-range (1–10 days) and long-range (1–3 months) forecasting;
- a study of weather features relevant to Australian tropical regions including research to improve predictions of formation, tracking and intensity of cyclones;
- a major collaborative effort involving the Bureau, CSIRO and universities, designed to enhance knowledge of the structure and evolution of summertime cold fronts in southern Australia;
- establishment of a program to improve the understanding of atmospheric systems that effect aviation services in Australia and development of techniques and instrumentation for identifying and forecasting those systems;
- development of a system to enable optimum use of meteorological information from satellite data and improvement of techniques for the incorporation of this data into forecasting systems.

The future

The pioneer meteorologists who issued the Bureau's first forecasts could never have envisaged the sophisticated technology available to the forecaster today.

However, there will be even more exciting developments in meteorology by the year 2000. More advanced satellites, faster and more powerful computers, improved radar equipment, and other sophisticated technological aids will all contribute to more effective and efficient meteorological services.

These improvements will be seen in:

- more timely and accurate forecasts of short-term weather situations such as thunderstorms and cool changes;
- computer-produced graphics that will make the weather come alive on television;
- more detailed forecasts for aviation, resulting in increased economy for airlines;

- more accuracy and precision in warnings of cyclones, dangerous fire days and flood situations;
- computer-produced forecasts of sea conditions, such as waves and swell, that will benefit shipping, offshore operations and the fishing industry.

Long-range forecasting is an extremely complex problem, but there are several promising lines of research that, within the next decade or so, should result in a capability for useful seasonal and longer-range predictions that will be of great benefit to farmers and others whose livelihood depends on seasonal weather conditions. Significant progress already has been made in identifying the factors that have to be monitored, with particular attention being given to the study of the variations in sea surface temperatures, atmospheric circulations and ocean currents.

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CHAPTER SIX

DEMOGRAPHY

THE POPULATION OF AUSTRALIA

By June 1986 the estimated resident population of Australia passed the 16 million mark, reaching 16,250,000 by mid-1987. Despite the continuous growth in population throughout the years since European settlement, the rate at which the growth has occurred has varied considerably. This chapter traces the history of population growth in the last two hundred years and the contributions made by natural increase and migration. The statistics in this chapter are derived from population censuses, registers of births, deaths and marriages, court records of divorces and other records such as passenger cards from international travel and family allowance transfers.

Estimates of the Aboriginal population at the time of European settlement vary considerably but recent archaeological finds suggest that a population of 750,000 could have been sustained. Since European settlement, the Aboriginal population has suffered considerable decline, although to what extent is unclear. Section 127 of the Constitution required the exclusion of Aboriginals when estimating the population of the Commonwealth or of a State or other part of the Commonwealth. This provision was repealed with the proclamation of the *Constitution Alteration (Aboriginals) Act 1967* and, since 10 August 1967, population and vital statistics have included full-blooded Aboriginals. Additionally, estimates back to 30 June 1961 have been revised to include Aboriginals.

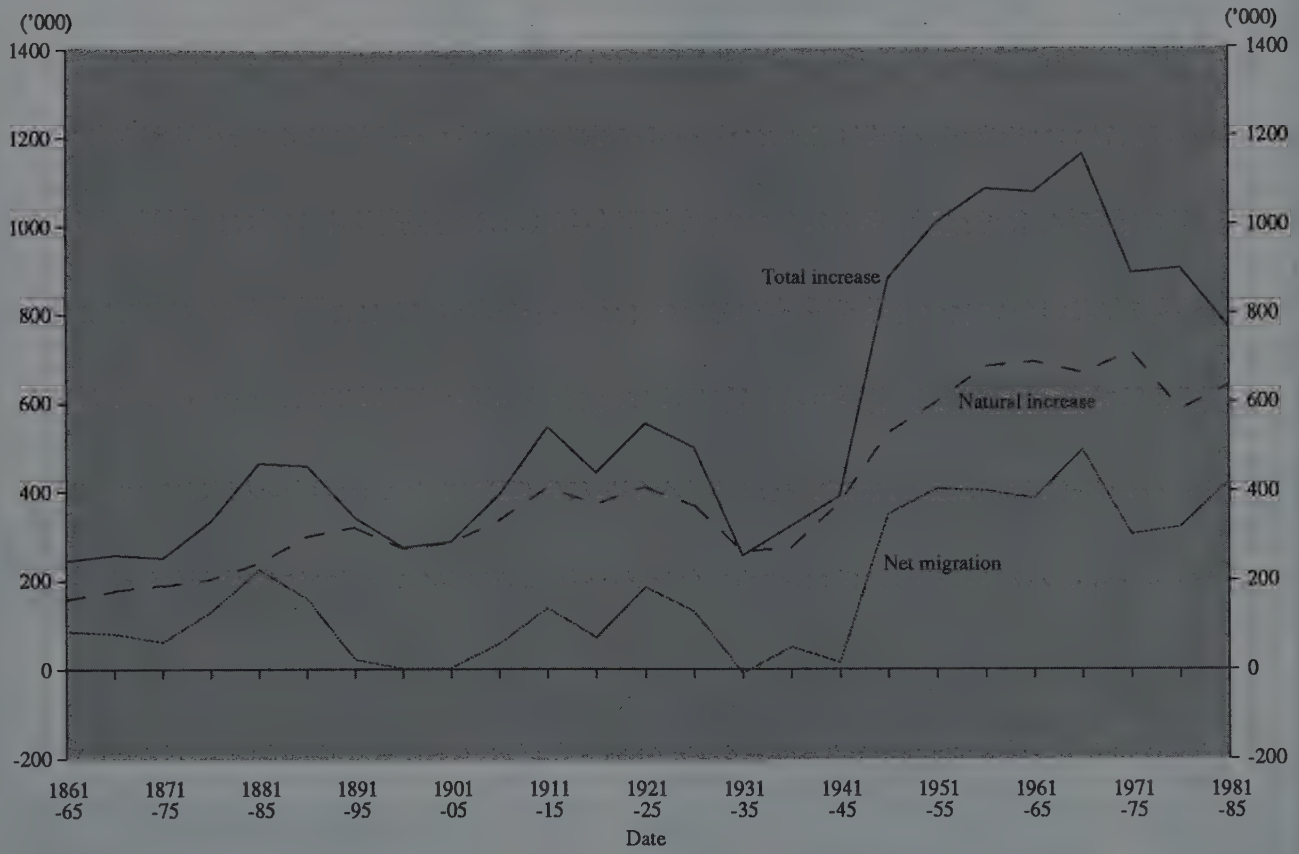
Size and growth of the Australian population

AUSTRALIAN POPULATION GROWTH SINCE EUROPEAN SETTLEMENT, TIME ELAPSED BETWEEN SUCCESSIVE MILLIONS, 1788–1986

Population (a)	*Year attained*	*Interval since previous million attained*		*Average annual rate of population growth*
		Years	Months	Per cent
One million	1858	70		. .
Two million	1877	19		3.7
Three million	1889	12		3.4
Four million	1905	16		1.8
Five million	1918	13		1.7
Six million	1925	7		2.6
Seven million	1939	14		1.1
Eight million	1949 (November)	10		1.3
Nine million	1954 (August)	4	9	2.5
Ten million	1959 (March)	4	7	2.3
Eleven million	1963 (December)	4	9	2.0
Eleven million	1963 (October)	. .	. .	. .
Twelve million	1968 (June)	4	8	1.9
Thirteen million	1972 (September)	4	3	1.9
Thirteen million	1971 (March)	. .	. .	. .
Fourteen million	1976 (March)	5	—	1.5
Fifteen million	1981 (October)	5	7	1.2
Sixteen million	1986 (June)	4	8	1.3

(*a*) For population estimation purposes, estimates prior to 1961 exclude full-blood Aboriginals. Estimates for dates earlier than the 1971 Census are based on census counts (actual location) and contain no adjustments for census under-enumeration. Estimates for 1971 and subsequent years are estimated resident population. The attainment of the eleventh million is shown both excluding and including full-blood Aboriginals and the attainment of the thirteenth million is shown both on an actual location basis and an estimated resident population basis.

POPULATION INCREASE AND COMPONENTS OF INCREASE, 1861 - 1985



NOTE: Full-blood Aboriginals excluded prior to 1962. Deaths and migration of troops excluded 1939-1947. Commencing 1976, net migration includes an adjustment for 'category jumping', whose duration of stay (category) differs from their stated intention at the time of arrival or departure.

The population of Australia now exceeds 16 million. The increase from 15 to 16 million took approximately 4 years and 10 months, compared with the 70 years it took to reach the first million, achieved in 1858, and the 19 years to reach the second million in 1877. The shortest period for a population growth of 1 million was 4 years and 3 months, when the population reached 13 million in 1972. The table above shows the growth of the Australian population since European settlement and clearly indicates the variety in growth rates.

Since 1788, four periods in particular experienced high rates of growth. The first of these occurred during the gold rush of the 1850s, when the population doubled from 0.5 million in 1852 to 1 million in 1858. Subsequent economic diversification and pastoral expansion led to the second period of rapid population growth during the prosperity of the 1850s, when the population increased by 1 million in the 12 years between 1877 and 1889, with average annual growth rates of 3.4 per cent.

Both the third and fourth phases of rapid growth occurred during the present century, after World War I and World War II. Between 1918 and 1925, the population grew by 1 million, with average annual growth rates rising from 1.7 per cent in the pre-war period to 2.6 per cent during 1918–25, before falling to 1.1 per cent during the economic depression of the 1930s. The boom in population growth after World War II continued until the early 1970s, with annual growth rates averaging 2.1 per cent between 1946 and 1970. After reaching 8 million in 1949 the addition of each successive million to the population took less than 5 years and, in 1972, stood at 13 million.

Until the 1860s, net migration was the major component of population growth, but since that time natural increase has been the dominant factor, providing 69.3 per cent of the increase between 1861 and 1985. Nevertheless, the importance of natural increase to population growth was greater during the period prior to World War II, contributing 83.3 per cent of total increase between 1901 and 1945, but only 62.4 per cent between 1946 and 1985.

Changes to the level of net migration have influenced the rate of population growth. Periods of rapid growth have included a large net migration component, 73.0 per cent in the 1850s, 40.1 per cent in the 1880s, 31.0 per cent in the first half of the 1920s and 39.1 per cent between 1946 and 1970. Conversely, the rate of population increase has fallen when net migration levels have dropped—during the economic depressions of the 1890s and 1930s, both World War I and World War II and, more recently, during the recession of the 1970s.

During the 1970s, population growth slowed as both net migration and natural increase declined, with average annual growth rates falling from 1.9 per cent at the end of the 1960s to 1.2 per cent between 1976–81. Natural increase stabilised more recently, while net migration generally increased and average annual growth rates have increased slightly in the 1980s to 1.3 per cent.

Population distribution

The population of Australia is concentrated in capital and other major cities, mainly on the south and east coasts of the continent (for details, *see* the coloured population density map). This results from a variety of factors including climate, physical characteristics of the continent, changing agricultural practices, exploitation of mineral resources and personal preference.

Historically the Australian colonies relied on shipping as a major form of transportation, both between themselves and with Britain. Subsequent economic developments throughout the 19th century, such as the development of an export economy based on wool, gold and wheat, together with a continuing dependence on imports, ensured the ascendency of capital cities located on or close to coastal ports.

The tendency of settlement to concentrate along the coastal strip was exacerbated initially by difficulties in traversing the coastal range of New South Wales. The arid nature of much of inland Australia militated against the viability of small-scale intensive farming techniques beyond the coastal areas.

In 1850, some 80.0 per cent of the population was estimated to be living in the older settlements of New South Wales and Tasmania, with most of the remaining population residing in South Australia. However, the gold discoveries of the 1850s attracted a wave of overseas migrants to the south-eastern corner of the continent, particularly to the Victorian goldfields. This pattern of settlement has continued since that time. At the 1986 Census, for instance, 62.1 per cent of the Australian population were living in New South Wales, Victoria and the Australian Capital Territory. The Australian Capital Territory had the highest population density of the States and Territories at 107.9 persons per square kilometre, followed by Victoria at 18.3 and New South Wales at 6.9. These figures contrast sharply with densities in Western Australia and the Northern Territory of 0.6 and 0.1 persons per square kilometre respectively.

POPULATION OF AUSTRALIA, STATES AND TERRITORIES(*a*)

Date	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
1828— November	36,598	..	..	..	..	..	..	..	..
1833— 2 September	60,794	..	..	..	..	..	..	..	..
1836— 2 September	77,096	..	..	..	..	..	..	..	..
1841— 2 March . .	130,856	..	..	..	..	..	..	..	..
27 September	..	..	..	..	..	50,216	..	..	..
1844—26 February .	..	..	..	17,366	..	..	..	..	..
1846—26 February .	..	..	..	22,390	..	..	..	..	..
2 March . .	189,609	..	..	..	..	..	..	..	..
1847—31 December.	..	..	..	..	..	70,164	..	..	..
1848—10 October .	..	..	..	..	4,622	..	..	..	..
1851— 1 January .	..	..	..	63,700	..	..	..	..	..
1 March . .	268,344	..	..	..	..	70,130	..	..	..
1854—26 April . .	..	(*b*)234,298	..	..	..	..	..	..	..
30 September	..	..	..	..	11,743	..	..	..	..
1855—31 March . .	..	..	..	85,821	..	..	..	..	..
1856— 1 March . .	269,722	..	..	..	..	..	..	..	..
1857—29 March . .	..	408,998	..	..	..	..	..	..	..
31 March . .	..	..	..	..	..	81,492	..	..	..
1859—31 December	..	..	..	..	14,837	..	..	..	..
1861— 7 April . .	350,860	538,628	(*b*)30,059	126,830	..	89,977	..	..	..
1864— 1 January .	..	..	61,467	..	..	..	..	..	..
1866—26 March . .	..	..	..	163,452	..	..	..	..	..
1868— 2 March . .	..	..	99,901	..	..	..	..	..	..
1870— 7 February .	..	..	..	..	..	99,328	..	..	..
31 March . .	..	..	..	..	24,785	..	..	..	..
1871— 2 April . .	502,998	730,198	..	185,626	..	..	..	..	..
1 September	..	..	120,104	..	..	..	..	..	..
1876—26 March . .	..	..	..	213,271	..	..	..	..	..
1 May . .	..	..	173,283	..	..	..	..	..	..
1881— 3 April . .	749,825	861,566	213,525	276,414	29,708	115,705	(*c*)3,451	..	2,250,194
1886— 1 May . .	..	..	322,853	..	..	..	..	..	..
5 April 1891 . .	1,127,137	1,140,088	393,718	315,533	49,782	146,667	4,898	..	3,177,823
31 March 1901 . .	1,354,846	1,201,070	498,129	358,346	184,124	172,475	4,811	..	3,773,801
3 April 1911 . .	1,646,734	1,315,551	605,813	408,558	282,114	191,211	3,310	(*b*)1,714	4,455,005
4 April 1921 . .	2,100,371	1,531,280	755,972	495,160	332,732	213,780	3,867	2,572	5,435,734
30 June 1933 . .	2,600,847	1,820,261	947,534	580,949	438,852	227,599	4,850	8,947	6,629,839
30 June 1947 . .	2,984,838	2,054,701	1,106,415	646,073	502,480	257,078	10,868	16,905	7,579,358
30 June 1954 . .	3,423,529	2,452,341	1,318,259	797,094	639,771	308,752	16,469	30,315	8,986,530
30 June 1961 . .	3,917,013	2,930,113	1,518,828	969,340	736,629	350,340	27,095	58,828	10,508,186
30 June 1966 . .	4,237,901	3,220,217	1,674,324	1,094,984	848,100	371,436	56,504	96,032	11,599,498
30 June 1971 . .	4,725,503	3,601,352	1,851,485	1,200,114	1,053,834	398,073	85,735	151,169	13,067,265
30 June 1976 . .	4,959,588	3,810,426	2,092,375	1,274,070	1,178,342	412,314	98,228	207,740	14,033,083
30 June 1981 . .	5,234,889	3,946,917	2,345,208	1,318,769	1,300,056	427,224	122,616	227,581	14,923,260
30 June 1986 . .	5,531,526	4,160,856	2,624,595	1,382,550	1,459,019	446,473	154,421	258,910	16,018,350

(*a*) Figures prior to 1971 are census counts. The estimates from June 1971 for each State and Territory are estimated resident populations at census dates. Figures prior to 1966 exclude full-blood Aboriginals. (*b*) Previously included with New South Wales. (*c*) Previously included with South Australia.

Discovery and exploitation of mineral resources have not only encouraged immigration from overseas, but have affected the distribution of population internally. Discoveries of gold in Queensland in the 1870s and Western Australia in the 1890s encouraged interstate migration from the south-eastern States, and particularly from Victoria and South Australia during the economic recession of the 1890s. This pattern of interstate migration to Queensland and Western Australia was repeated during the 1960s mineral boom in those States. However, the rank order of the States by population numbers in 1901 (New South Wales, Victoria, Queensland, South Australia, Western Australia and Tasmania) remained the same until 1982 when the population of Western Australia surpassed that of South Australia.

In June 1983, 69.0 per cent of the Australian population lived in the combined State capitals, the national capital and Darwin, and four other major cities of 100,000 or more persons (capital city statistical divisions and statistical districts). Although urban populations are not strictly comparable due to changes in classification, the proportions of New South Wales and Victorian populations residing in the metropolitan areas of Sydney and Melbourne at the 1871 Census were 26.7 per cent and 28.9 per cent respectively, while one hundred years later these proportions were estimated to be 63.8 per cent and 71.5 per cent.

AUSTRALIANS

AUSTRALIA
The Wild Continent
AUSTR

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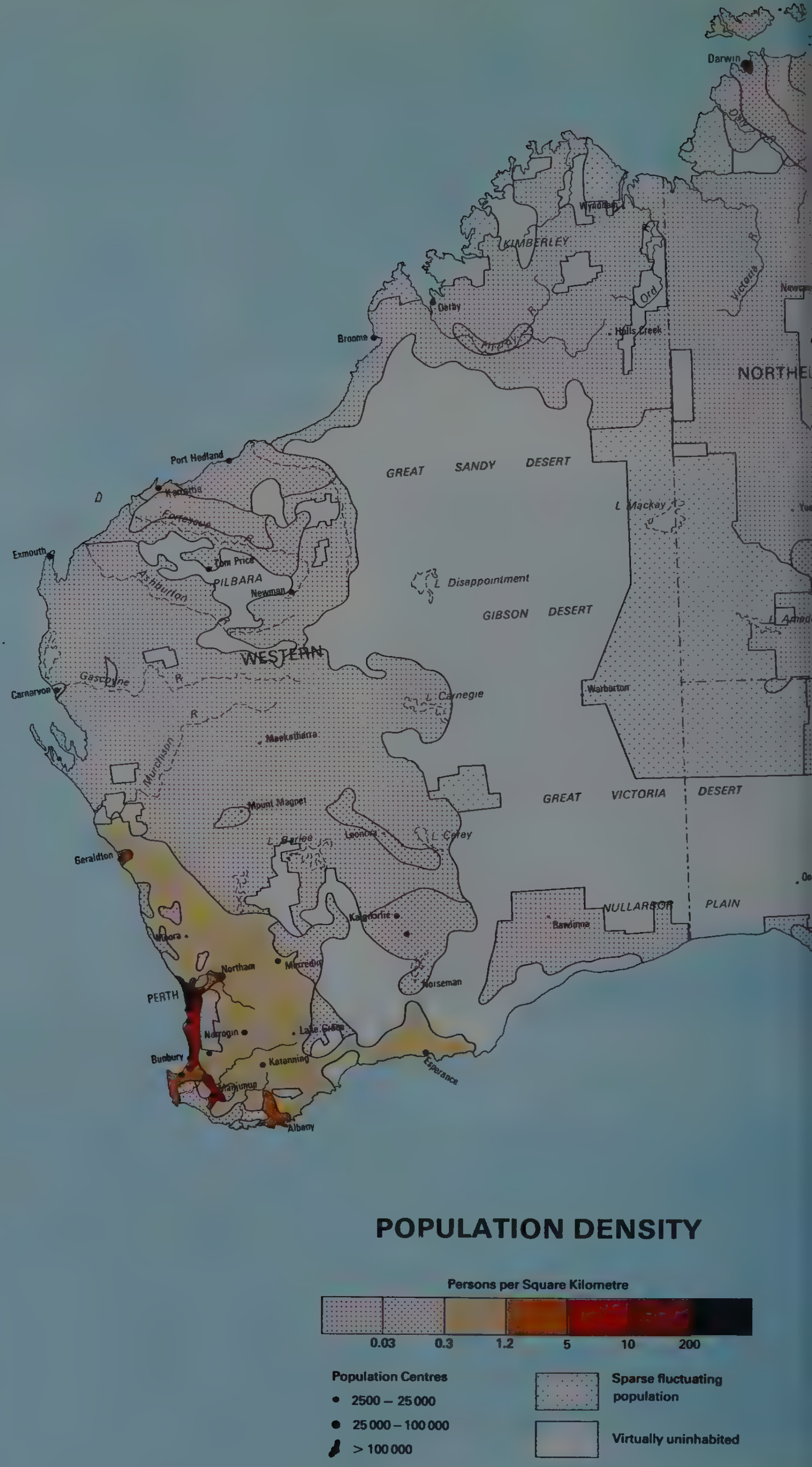
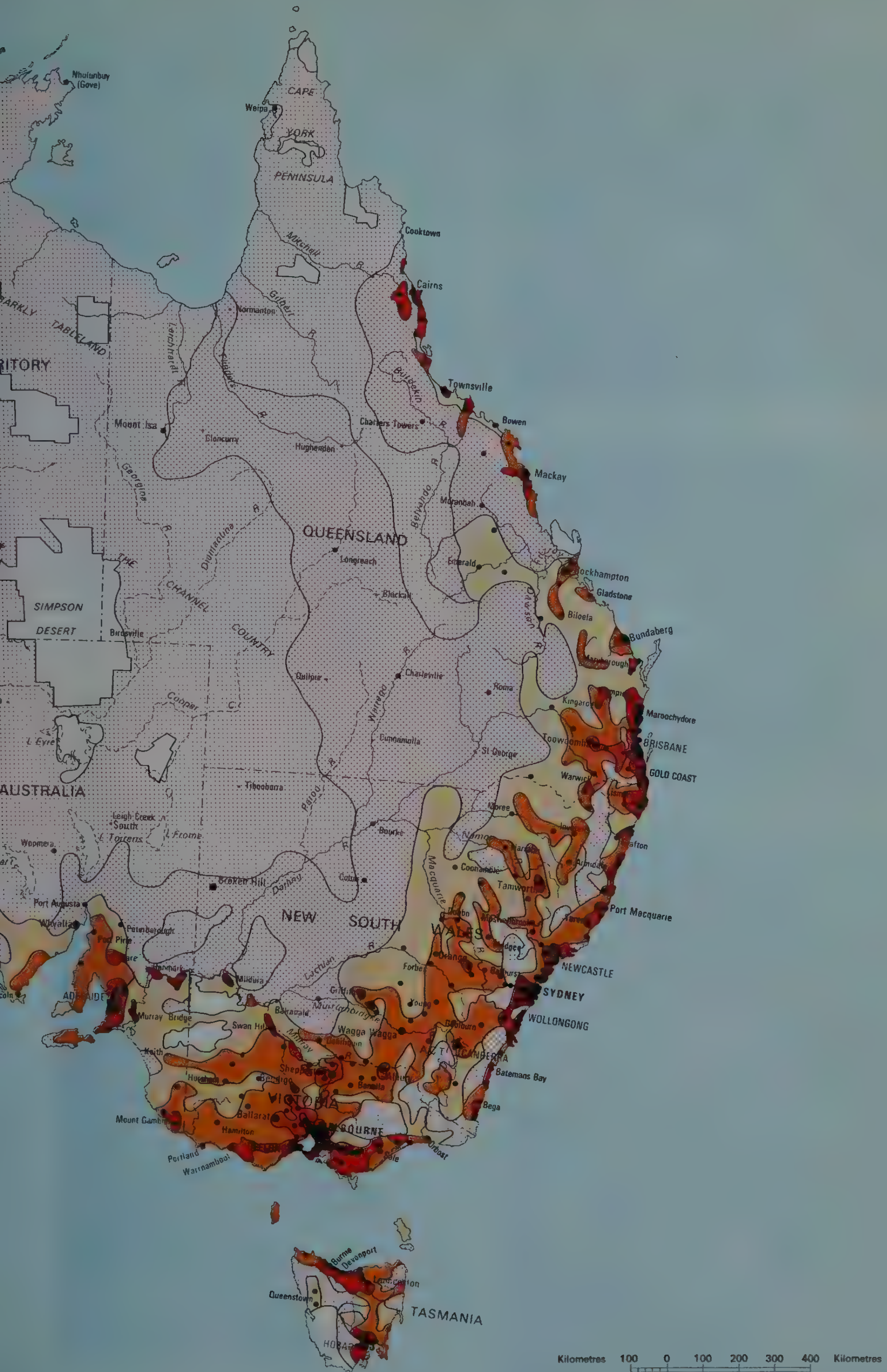
POPULATION DENSITY


Darwin
Daly
Wyndham
KIMBERLEY
Derby
Broome
Fitzroy R.
Ord
Halls Creek
Victoria R.
NORTHE
Port Hedland
Karratha
Fortescue R.
Exmouth
Tom Price
PILBARA
Ashburton
Newman
GREAT SANDY DESERT
L Mackay
L Disappointment
GIBSON DESERT
WESTERN
Carnarvon
Gascoyne R.
L Carnegie
Warburton
Meekatharra
Murchison R.
Mount Magnet
GREAT VICTORIA DESERT
L Barlee
Leonora
L Carey
Geraldton
Kalgoorlie
NULLARBOR PLAIN
Moora
Northam
Merredin
Norseman
PERTH
Narrogin
Lake Grace
Bunbury
Katanning
Manjimup
Esperance
Albany
Persons per Square Kilometre
0.03
0.3
1.2
5
10
200
Population Centres
2500 – 25 000
25 000 – 100 000
> 100 000
Sparse fluctuating population
Virtually uninhabited

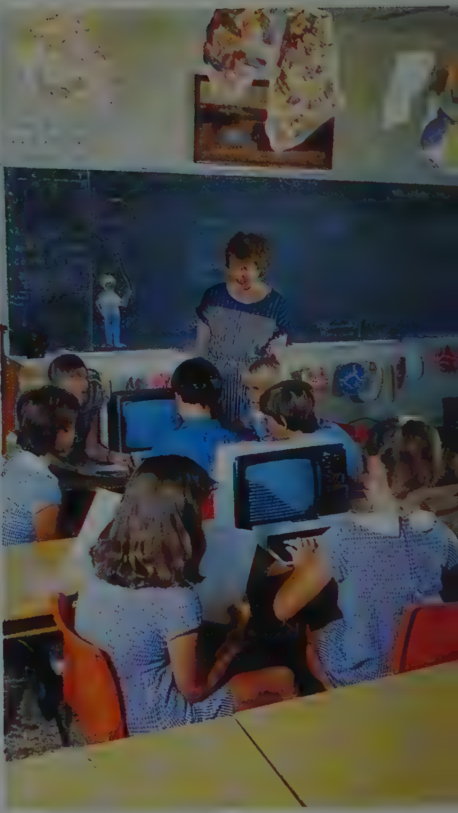
SOURCE: Based on data from the Census of Population and Housing, 1981.

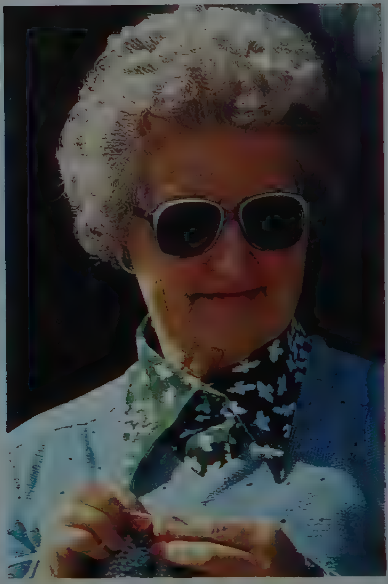
NATMAP

NMP 86/008.11


Nhulunbuy (Gove)
CAPE
Weipa
YORK
PENINSULA
Cooktown
Mitchell
Cairns
BARKLY
TABLELAND
Normanton
Gilbert
R.
Leichhardt
Flinders
RITORY
Burdekin
Townsville
Bowen
Mount Isa
Cloncurry
Hughenden
Charters Towers
R.
Mackay
Georgina
Belyando
Moranbah
Diamantina
R.
QUEENSLAND
Longreach
Emerald
Rockhampton
Gladstone
THE
CHANNEL
COUNTRY
Barcaldine
Dawson
Biloela
SIMPSON
DESERT
Birdsville
Bundaberg
Maryborough
Quilpie
Charleville
Roma
Kingaroy
Maroochydore
Cooper
Cr.
Warrego
BRISBANE
L Eyre
Cunnamulla
Toowoomba
St George
GOLD COAST
Warwick
AUSTRALIA
Tibooburra
Paroo
Moree
Leigh Creek
Lake Frome
Woomera
Bourke
Namoi
Grafton
Coonabarabran
Armidale
Tamworth
Broken Hill
Darling
Macquarie
Cobar
Port Macquarie
Port Augusta
NEW
SOUTH
WALES
Whyalla
Dubbo
Port Pirie
Peterborough
Muswellbrook
Mudgee
NEWCASTLE
Forbes
Orange
Bathurst
Renmark
Mildura
Lachlan
SYDNEY
ADELAIDE
Griffith
Young
Murray Bridge
Swan Hill
Balranald
Murrumbidgee
Goulburn
WOLLONGONG
Wagga Wagga
Deniliquin
A.C.T.
CANBERRA
Keith
Murray
Shepparton
Albury
Horsham
Bendigo
Benalla
Batemans Bay
VICTORIA
Ballarat
Bega
Mount Gambier
Hamilton
MELBOURNE
Portland
Warrnambool
Sale
Orbost
Burnie
Devonport
Launceston
Queenstown
TASMANIA
HOBART
Kilometres 100 0 100 200 300 400 Kilometres

AUSTRALIANS





Photographs — Promotion Austra

Between 1921 and 1947, 71.1 per cent of the intercensal population increase was within capital cities, and this proportion increased to 81.0 per cent between 1947 and 1981. With the continuing development of urban industrialisation in the 20th century, capital cities have been the consistent choice for settlement of the majority of overseas immigrants, as well as receiving centres in the general internal trend towards rural to urban migration which persisted until recent times. This trend was already established by the 1890s as changing technological and marketing conditions associated with agricultural practices reduced the potential for labour force absorption to below the level of natural increase. By the 1930s, the population in rural areas had declined, not only as a proportion of the total population, but also in absolute numbers.

URBAN–RURAL DISTRIBUTION OF POPULATION AT CENSUS DATES, AUSTRALIA(*a*)

(per cent (*b*))

Census Year	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
				URBAN					
1921 . .	67.8	62.3	52.1	60.0	59.3	50.5	36.2	—	62.1
1933 . .	69.2	65.4	52.7	62.7	57.5	51.5	32.3	81.9	63.8
1947 . .	71.9	71.0	59.7	69.4	64.6	58.9	23.4	89.7	68.7
1954 . .	82.6	81.3	73.0	74.5	71.0	65.9	65.9	93.3	78.7
1961 . .	85.1	84.8	75.9	78.8	73.2	70.4	39.6	96.0	81.7
1966 . .	86.4	85.5	76.4	82.4	75.7	70.3	53.4	96.1	82.9
1971 . .	88.6	87.7	79.4	84.6	81.5	74.2	64.1	97.8	85.6
1976 . .	88.7	87.9	80.2	84.9	83.5	74.9	66.4	98.4	86.0
1981 . .	88.2	87.8	79.1	84.9	84.6	75.1	74.2	99.0	85.7
				RURAL					
1921 . .	31.6	37.3	47.5	39.4	39.1	49.2	62.1	99.7	37.4
1933 . .	30.6	34.5	46.9	37.0	41.8	48.2	66.2	18.1	35.9
1947 . .	27.9	28.9	40.1	30.3	34.9	40.9	75.4	10.4	31.1
1954 . .	17.2	18.4	26.8	25.2	28.7	33.9	32.7	6.7	21.0
1961 . .	14.6	15.0	24.0	20.8	26.4	29.4	59.9	4.0	18.1
1966 . .	13.4	14.4	23.5	17.5	23.9	29.6	46.1	3.9	16.9
1971 . .	11.3	12.2	20.4	15.3	18.2	25.7	35.4	2.2	14.3
1976 . .	11.1	12.1	19.7	15.0	16.3	24.9	33.0	1.6	13.9
1981 . .	11.8	12.1	20.8	15.1	15.3	24.8	25.3	1.0	14.2

(*a*) Census counts by State of enumeration. Excludes full-blood Aboriginals prior to 1961. (*b*) Urban and rural proportions do not add up to 100 per cent as the proportion of migratory population is not included.

Between the 1976 and 1981 Censuses, however, the proportion of the population living in rural areas actually increased from 13.9 per cent to 14.2 per cent, while the proportion of State populations living in the capital cities of Sydney, Melbourne, Brisbane and Adelaide has declined slightly since 1976. Parallel with this has been an emerging trend since the 1970s towards selective rapid growth of smaller coastal towns in Queensland, New South Wales and Victoria which have favoured the development of retirement, recreation and tourist amenities.

POPULATION OF CAPITAL CITIES, AUSTRALIA

	1921(a)	*1947(a)*	*1961(a)*	*1971(a)*	*1976(a)*	*1976(b)*	*1981(b)*	*1985(b)*
				POPULATION (PERSONS)				
Sydney	899,059	1,484,004	2,183,704	2,935,937	3,021,982	3,143,750	3,279,500	3,391,600
Melbourne	766,465	1,226,409	1,914,011	2,503,022	2,604,035	2,723,700	2,806,300	2,916,600
Brisbane	209,946	402,030	621,770	869,579	957,745	1,000,850	1,096,200	1,157,200
Adelaide	255,375	382,454	588,093	842,693	900,432	924,060	(*f*)954,300	(*f*)987,100
Perth	154,873	272,528	420,283	703,199	805,747	832,760	922,040	1,001,000
Hobart	52,361	76,534	115,932	153,216	162,062	164,400	171,110	178,100
Darwin (*c*)	1,399	2,538	12,326	38,885	46,655	44,232	56,478	68,500
Canberra (*d*)	3,873	20,189	65,896	159,003	215,461	226,450	246,500	273,600
(*e*).	2,048	15,156	56,449	142,925	196,538	206,550	226,450	251,950
Total (*b*)	**2,343,351**	**3,866,686**	**5,922,015**	**3,205,534**	**8,714,119**	**9,060,202**	**9,532,428**	**9,973,700**

POPULATION OF CAPITAL CITIES, AUSTRALIA—*continued*

	1921(a)	*1947(a)*	*1961(a)*	*1971(a)*	*1976(a)*	*1976(b)*	*1981(b)*	*1985(b)*
	PROPORTION OF STATE POPULATION (PER CENT)							
Sydney	42.8	49.7	55.7	63.8	63.3	63.4	62.7	61.9
Melbourne	50.1	59.7	65.3	71.5	71.4	71.5	71.1	70.7
Brisbane	27.8	36.3	40.7	47.6	47.0	47.8	46.7	45.4
Adelaide	51.6	59.2	60.5	71.8	72.3	72.5	72.3	72.4
Perth	46.6	54.2	56.3	68.2	70.4	70.7	70.9	71.1
Hobart	24.5	29.8	33.1	39.2	40.2	39.9	40.1	40.3
Darwin (*c*)	36.2	23.4	27.7	45.0	48.1	45.0	46.1	47.6
Canberra (*d*)	79.7	89.7	96.0	99.2	99.5	99.4	99.5	99.5
Total	**43.1**	**51.0**	**56.1**	**64.3**	**64.3**	**64.6**	**63.9**	**63.3**

(*a*) Census counts actual location (not adjusted for under-enumeration). (*b*) Estimated resident populations at 30 June. (*c*) Urban area for years 1920 to 1961, Darwin Statistical Division for years 1971 onwards. (*d*) Includes Queanbeyan urban area for years 1921 and 1947, Canberra Statistical District for years 1961 onwards. (*e*) Excluding Queanbeyan. (*f*) Estimate based on Statistical Division boundary as re-defined at 30 June 1985.

Age/sex profile

AGE DISTRIBUTION, SEX RATIOS AND MEDIAN AGES OF THE POPULATION, AUSTRALIA

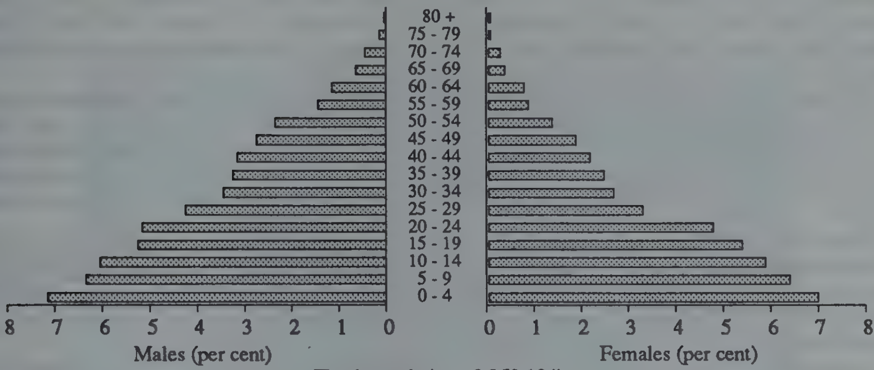
	Sex ratios (a)				
Census	*Ages 15–25*	*Ages 15–44*	*All ages*	*Aust. born*	*O'seas born*
1861	n.a.	n.a.	137.1	(*b*)101.1	(*b*)169.4
1871	n.a.	n.a.	120.7	(*b*)101.7	(*b*)149.0
1881	103.9	118.7	120.8	100.8	153.3
1891	104.8	119.9	115.9	101.4	155.5
1901	101.1	110.4	110.1	100.5	151.3
1911	104.0	106.7	108.0	100.7	152.0
1921	98.9	100.3	103.4	98.6	134.2
1933	103.1	103.2	103.2	99.0	135.0
1947	101.3	101.9	100.4	97.8	127.5
1954	106.2	106.2	102.4	98.1	132.7
1961	106.4	106.7	102.2	98.2	124.7
1966	104.8	106.0	101.4	98.0	117.9
1971	104.4	105.6	101.1	98.0	114.3
1976	102.8	104.3	100.4	97.8	109.5
1981	103.3	103.4	99.6	97.4	107.5
1986	104.1	103.1	99.7	n.y.a.	n.y.a.

	Percent of population aged				
Census	*0–14*	*15–44*	*45–64*	*65+*	*Median ages (c)*
1861	36.3	62.7		1.0	n.a.
1871	42.1	56.2		1.7	n.a.
1881	38.9	45.5	13.0	2.2	20.1
1891	36.9	47.8	12.3	2.9	21.7
1901	35.1	48.8	12.0	4.0	22.5
1911	31.7	49.1	14.9	4.3	24.0
1921	31.7	46.9	17.0	4.4	25.8
1933	27.5	47.4	18.6	6.5	27.7
1947	25.1	45.6	21.3	8.0	30.7
1954	28.5	43.1	20.0	8.3	30.2
1961	30.2	41.4	19.9	8.5	29.4
1966	29.4	42.2	19.9	8.5	28.2
1971	28.7	43.0	20.0	8.3	27.5
1976	27.0	44.1	20.0	8.9	28.4
1981	25.0	46.1	19.2	9.7	29.6
1986	23.1	47.3	19.1	10.5	31.1

(*a*) Males per 100 females. (*b*) Figures for birthplace not available for Tasmania, therefore excluded from sex ratios for Australian-born and Overseas-born. (*c*) The median age is the age at which half of the population is older and half is younger.

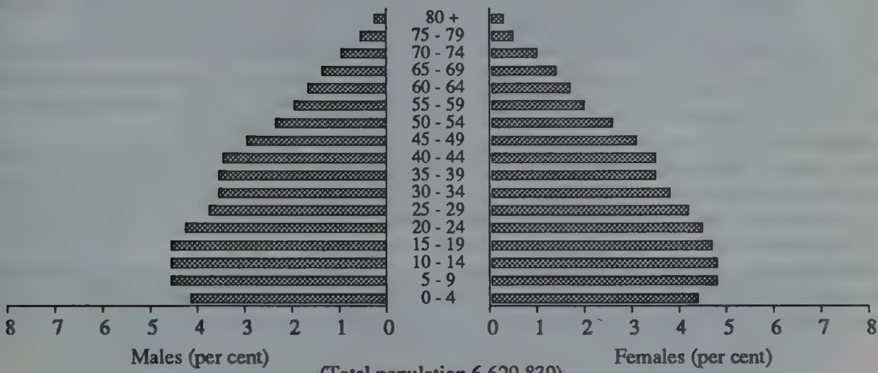
POPULATION AGE PYRAMIDS, AUSTRALIA

1881 CENSUS



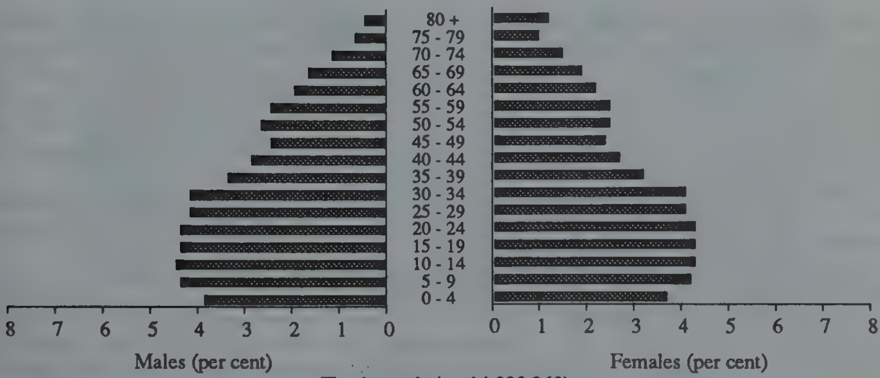
(Total population: 2,250,194)

1933 CENSUS



(Total population 6,629,839)

1981 CENSUS



(Total population 14,923,260)

During the early years of European settlement the age/sex profile of the non-Aboriginal population was highly irregular, consisting predominantly of young adult males. Although efforts were made from the 1830s to assist families and young single women to migrate to Australia, the gold discoveries of the 1850s and the high rates of economic growth which followed until the late 1880s encouraged the continuance of migration in which males predominated. Net migration figures from 1861 to 1900 show that males outnumbered females almost 2 to 1.

Throughout the latter half of the 19th century, however, rises in natural increase ensured a decline in the overall sex ratio, particularly among the younger age groups. At the 1881 census, for example, the overall sex ratio was 121 males for every 100 females but stood at 143 for those aged 25 and over and 103 for those under 25 years. The sex ratio continued to decline until after World War II when the male dominated overseas migration intake reversed this trend.

While the overall sex ratio remained around 102 during the 1950s and 1960s, for the 15–44 year age group the ratio was 106 or more. Both began to fall during the 1970s as migration rates declined and the composition of the migrant intake changed. By 1981, the female population of Australia exceeded the male population, with the sex ratio indicating a definite female bias in the older age groups.

Comparison of the 1881 and 1981 age pyramids clearly shows the extent to which the Australian population has 'aged' during the last 100 years. At the 1881 census, the median age was 20.8 years, by 1981 it had reached 29.6 years and it is predicted to increase to between 34.3 and 34.9 years by 2001. Similarly, the proportion of the population aged 65 years and over has increased from 2.2 per cent in 1881 to 9.7 per cent in 1981 while the proportion aged less than 15 years fell from 38.9 per cent to 25.0 per cent in the same period.

The change in the age structure over the last century has been due to improvements in life expectancy, and declines in the birth rate, both of which have increased the median age of the population. Declines in fertility are particularly indicated by the undercutting at the base of the age pyramids for 1933 and 1981 in the under 5 age group.

Nevertheless, the trend towards ageing of the population has not been uniform throughout the last century. High levels of migration and rising numbers of births during the 1950s and 1960s both contributed to a temporary decline in the median age, from 30.7 years in 1947 to 27.5 years in 1971, while the proportion aged under 15 increased from 25.1 per cent in 1947 to 30.2 per cent in 1961, as indicated in the previous table.

Rapid declines in fertility and, to a lesser extent, mortality, have contributed significantly to the ageing of the population in the 1970s and 1980s. However, the increase in migration flows as well as emphasis on family migration, has tended to delay this process.

Marital status

Marriage laws were first enacted in the Australian colonies from the late 1830s. Following Federation the Commonwealth Parliament was given power to legislate concerning marriage, divorce and matrimonial causes. Subsequent amendments were made to the Marriage Act in 1961.

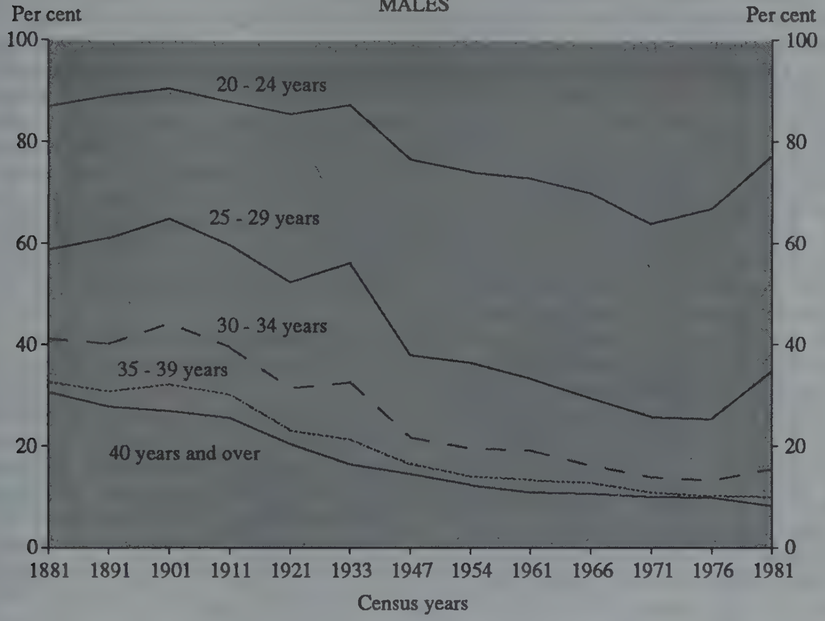
The Marriage Act makes provision, on a uniform basis, in respect of prohibited relations, other grounds for void marriages, legitimation, marriage overseas and pre-marital education. Dissolution of marriage was covered by separate State and Territory legislation until 1961 when the *Matrimonial Causes Act 1959–66* came into operation. The *Family Law Act 1975* which replaced the Matrimonial Causes Act, came into operation on 5 January 1976 and provides for a single ground for divorce—irretrievable breakdown of marriage—and for nullity of marriage on the ground that the marriage is void.

A major factor influencing marriage rates and therefore the marital status of the population in the first century of European settlement was the availability of partners and, in particular, the sex ratio at marriageable ages.

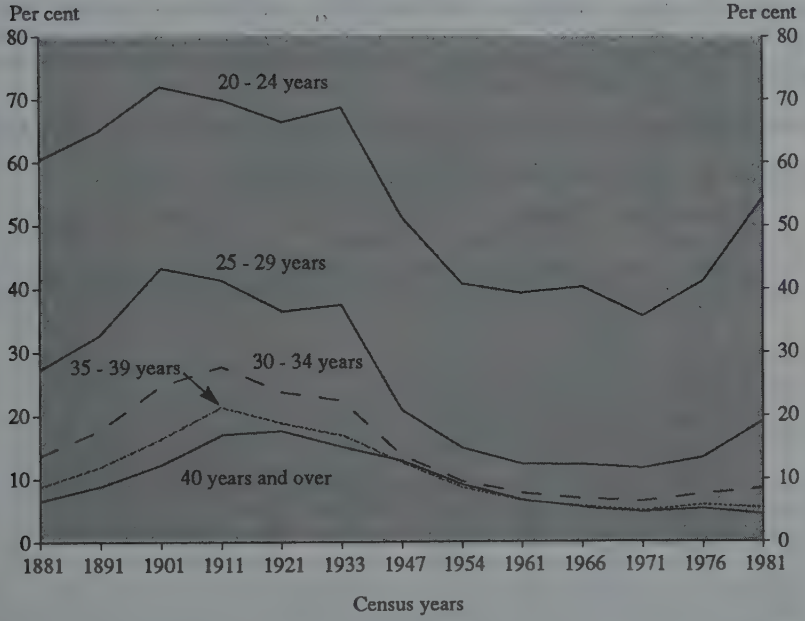
At the 1851 census, the New South Wales Statistician reported that 77 per cent of women aged 20 and over in the colony were married, compared with 57 per cent in Great Britain. However, proportions for men aged 20 and over showed 49 per cent married in New South Wales compared with 62 per cent in Great Britain. By the time of the 1881 census, the proportion of males aged 15 and over ever-married in Australia was 47 per cent compared with 63 per cent of women. The proportion of women never-marrying was lower than for

PROPORTION OF NEVER MARRIED PERSONS, CENSUS DATES, AUSTRALIA

MALES



FEMALES



men in every age group, with only 6.6 per cent of women remaining unmarried at ages 40–44 compared with 30.6 per cent of men.

Towards the end of the 19th century, the pattern of high incidence of marriage for women began to change. A number of factors combined to reduce the availability of marriage partners for women, particularly in south-east Australia. Overseas migration virtually ceased during the economic depression of the 1890s and sex ratios for the 15–24 year-olds began to fall, the numbers of males and females being close to equal by 1901. Moreover, the geographical distribution of the sexes differed, with men leaving the south-eastern States in search of work, particularly in the Western Australian goldfields. By 1901 the sex ratio for the 15–24 year-olds was below 100 in Victoria, New South Wales and South Australia, varying throughout Australia between 93 in Victoria to 144 in Western Australia.

In the years following the 1881 census, the proportion of males who had never married by ages 40–44 declined continually at every census date to about 10 per cent in 1981. For women of the same age group, however, the proportions who never married increased until the 1921 Census, peaking at 17.7 per cent, and did not decline to the low rates of 1881 until 1961. The overall extent of the decline in proportions never-married during the last century has thus been greater for men than for women.

Part of the decline in proportions of never married following the 1933 Census can be accounted for by marriages deferred during the economic depression, but more importantly, there was a shift to marrying at an earlier age.

By 1971, only 10 per cent of men and 5 per cent of women aged 40–44 had never married. Since the 1970s there has been a reversal of these previous trends. The increasing proportions of never married for both sexes in the younger age groups since 1971 can be seen in the above graph. In the decade between 1971 and 1981 there has been an increase in the proportions of never married in the 20–24 year age group by 13 percentage points for males and 18 percentage points for females. At the time of the 1981 Census, the proportions never married had increased for both sexes at all ages between 15 and 35 years, suggesting that there is likely to be an overall increase in the proportions who will ultimately never marry.

Two changes are noticeable within the distribution of the ever-married population. Firstly, there has been a gradual increase in the proportion of divorced persons since 1901 with a more noticeable increase since 1976 following reforms to the Family Law Act in 1975 (*see* also Vital Statistics Section on divorce). Secondly, while the proportion of widows has increased since the turn of the century, the proportion of widowers has declined. This change needs to be set in the context of improvements to life expectancy and falls in death rates which have been greater for females than males since 1901, thus increasing the likelihood that married women will survive their husbands.

POPULATION AGED 15 AND OVER: MARITAL STATUS BY SEX (*a*), AUSTRALIA

(per cent)

Census Year	*Never Married*		*Married*		*Married but Permanently Separated*		*Divorced*		*Widowed*	
	Males	*Females*	*Males*	*Females*	*Males*	*Females*	*Males*	*Females*	*Males*	*Females*
1881 . . .	53.0	37.0	43.0	54.7	..	..	..	..	4.0	8.4
1891 . . .	52.9	38.0	42.8	53.1	..	..	..	..	4.3	8.8
1901 . . .	52.1	40.5	43.5	50.0	..	..	0.1	0.1	4.4	9.4
1911 . . .	49.7	40.2	46.2	50.8	..	..	0.2	0.2	4.0	8.9
1921 . . .	42.5	35.6	52.9	54.8	..	..	0.2	0.2	3.9	9.0
1933 . . .	41.7	34.9	53.3	54.6	..	..	0.4	0.5	4.0	9.7
1947 . . .	32.8	26.3	59.8	59.2	2.1	2.4	0.9	1.0	4.0	10.9
1954 . . .	29.7	21.5	63.7	64.1	1.8	2.1	1.0	1.2	3.5	11.0
1961 . . .	29.8	21.1	64.2	64.3	1.9	2.2	1.1	1.2	3.2	11.2
1966 . . .	30.6	22.1	63.6	63.2	1.8	2.1	1.1	1.3	3.0	11.4
1971 . . .	29.3	20.7	66.5	66.3	1.9	2.1	1.4	1.6	2.9	11.4
1976 . . .	29.1	21.1	66.3	62.6	2.3	2.8	2.0	2.5	2.6	11.3
1981 . . .	30.9	22.9	63.3	61.6	2.4	2.3	3.3	4.1	2.5	11.1
1986 . . .	32.5	24.4	58.6	57.1	2.4	2.8	4.2	5.1	2.4	10.6

(*a*) Not-stated for 1921, 1933, 1947 and 1954 were: 1921, males 0.5 per cent, females 0.3 percent; 1933, males 0.6 per cent, females 0.3 per cent; 1947, males 0.4 per cent, females 0.4 per cent; 1954, males 0.3 per cent, females 0.2 per cent. Proportions may not total 100 per cent due to rounding. Figures for 'Married but Permanently Separated' included with 'Married' until 1947 Census and 'Divorced' unavailable prior to 1901 Census.

Birthplace

After the arrival of European settlers and the numerical decline of the Aboriginal population, the British rapidly became the most populous birthplace group in Australia. However, by the 1860s, natural increase had become the major component in population growth and by the 1870s, the majority of the population were born in Australia. Thereafter, the overseas-born declined as a proportion of the total population until after World War II, when there was a reversal of the trend. In 1881, the overseas-born comprised 36.8 per cent of the population; by 1947 this had fallen to 9.8 per cent while numbers declined from over 1,000,000 at the 1891 census, following the immigration boom of the 1880s, to 744,200. By 1986, however, the overseas-born had increased to 20.8 per cent of the total population, numbering 3,247,381.

MAJOR BIRTHPLACE GROUPS, AUSTRALIA, SELECTED CENSUS DATES

Birth place	*1881*	*1901*	*1947*	*1954*	*1971*	*1981*	*1986*
Africa	(*a*)	2,869	7,537	15,826	61,935	90,237	108,547
America	(*a*)	12,507	11,630	14,496	55,752	96,247	116,459
Asia	(*a*)	47,014	24,096	51,581	167,226	371,588	536,152
Europe	(*a*)	753,832	651,606	1,155,064	2,196,478	2,232,718	2,221,802
U.K. and Eire	689,642	679,159	541,267	664,205	1,088,210	1,132,601	1,127,196
Germany	(*a*)	38,352	14,567	65,422	110,811	110,758	114,810
Greece	(*a*)	878	12,291	25,862	160,200	146,625	137,637
Italy	(*a*)	5,678	33,632	119,897	289,476	275,883	261,878
Yugoslavia	(*a*)	(*b*)	5,866	22,856	129,816	149,335	150,040
Other Europe	(*a*)	29,765	43,983	256,822	417,965	417,516	430,241
New Zealand	(*a*)	25,788	43,610	43,350	80,466	176,713	211,670
Other	137,827	15,566	5,708	6,149	17,461	36,331	52,751
Overseas	*827,469*	*857,576*	*744,187*	*1,286,466*	*2,579,318*	*3,003,834*	*3,247,381*
Australia	*1,422,725*	*2,908,303*	*6,835,171*	*7,700,064*	*10,176,320*	*11,393,861*	*12,110,456*
Not stated	..	*7,922*	..	..	..	*178,635*	*244,319*
Total	**2,250,194**	**3,773,801**	**7,579,358**	**8,986,530**	**12,755,638**	**14,576,330**	**15,602,156**
			— per cent —				
Africa	(*a*)	0.1	0.1	0.2	0.5	0.6	0.7
America	(*a*)	0.3	0.2	0.2	0.4	0.7	0.7
Asia	(*a*)	1.2	0.3	0.6	1.3	2.5	3.4
Europe	(*a*)	20.0	8.6	12.9	17.2	15.3	14.2
U.K. and Eire	30.6	18.0	7.1	7.4	8.5	7.8	7.2
Germany	(*a*)	1.0	0.2	0.7	0.9	0.8	0.7
Greece	(*a*)	(*b*)	0.2	0.3	1.3	1.0	0.9
Italy	(*a*)	0.2	0.4	1.3	2.3	1.9	1.7
Yugoslavia	(*a*)	(*b*)	0.1	0.3	1.0	1.0	1.0
Other Europe	(*a*)	0.8	0.6	2.9	3.3	2.9	2.8
New Zealand	(*a*)	0.7	0.6	0.5	0.6	1.2	1.4
Other	6.1	0.4	0.1	0.1	0.1	0.2	0.3
Overseas	*36.8*	*22.7*	*9.8*	*14.3*	*20.2*	*20.6*	*20.8*
Australia	*63.2*	*77.1*	*90.2*	*85.7*	*79.8*	*78.2*	*77.6*
Not stated	..	*0.2*	..	..	..	*1.2*	*1.6*
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(*a*) Included in 'Other', except for U.K. and Eire. (*b*) Included in 'Other Europe'. Percentage distribution may not equal totals due to rounding error.

The composition of the overseas-born population between 1788 and 1947 remained predominantly British, although the gold rush in the 1850s encouraged the proliferation of a wider range of nationalities. For example, in Victoria non-British subjects increased from 1,500 to 46,000 between the 1851 and 1861 censuses and one man in five was estimated to be Chinese at some of the gold diggings.

This diversification was short-lived. Many of the miners were transients who subsequently left for the New Zealand goldfields, while restrictive immigration practices imposed during the second half of the 19th century, curtailed Chinese and other non-European migration. By the 1891 census, following high levels of immigration during the 1880s, 81.7 per cent of the overseas-born were from the United Kingdom and Ireland, comprising 25.7 per cent of the Australian population at the time, while the other larger birthplace groups—Germany and China—comprised only 1.4 per cent and 1.1 per cent of the Australian population respectively.

With the adoption of the 'White Australia' policy after Federation, and emphasis on United Kingdom migration throughout the first half of this century, the extent of representation of other overseas birthplace groups in the Australian population diminished further. By 1947, 97.9 per cent of the Australian population were either born in Australia or the United Kingdom, Ireland or New Zealand. The largest non-British overseas-born group, the Italians, comprised only 0.4 per cent of the population (33,600), while the number of overseas-born Chinese had fallen from 36,000 in 1891 to 6,400 by 1947.

Since 1947, not only has the decline of the overseas-born population been reversed, significant changes have taken place in the composition of that group. The progressive removal of immigration restrictions based on country of origin, race or colour between 1949 and 1973, together with the extension of assisted migration schemes to some non-British groups and refugees, have ensured a greater diversity of ethnic origin among the Australian population (*see* also section on Overseas Migration). The relative size of overseas-born groups from the United Kingdom, Eire and New Zealand combined, increased only slightly as a proportion of the total population between 1947 and 1981, from 7.7 per cent to 9.0 per cent. However, overseas-born persons from other countries increased from 2.1 per cent to 11.6 per cent during the same period. Overseas birthplace groups comprising 0.1 per cent or more of the total population—apart from the United Kingdom, Eire and New Zealand—increased in number from 4 in 1947 to 14 by 1954 and 26 by 1981.

The largest overseas-born group at the present time remains those born in the United Kingdom and Ireland, having more than doubled in number from 541,300 to 1,127,200 between 1947 and 1986. By comparison, the second largest overseas-born group, Italians, comprised only 1.7 per cent of the Australian population in 1986 (261,900). Eight of the first nine large overseas-born groups are European, the exception being New Zealand which comprised 1.4 per cent of the population and ranked third after Italy in 1986. Although Europe remains the region of origin of the majority of the overseas-born population, European-born persons declined as a proportion of the total Australian population between 1971 and 1986, while persons born in other regions increased their share. Between 1971 and 1986, the European-born population increased by only 39,000 compared with an increase of 369,000 in the Asian-born group.

The proportion of the Australian population born in Asia has increased continually from 0.3 per cent in 1947 to 3.4 per cent in 1986. As recently as 1966, however, only two Asian birthplace groups had populations amounting to more than 0.1 per cent of the Australian population, namely China and India. By 1981 this number had increased to nine. Sources of the largest Asian-born populations in 1986 were Vietnam (83,040), Lebanon (56,340), India (47,820) and Malaysia (47,800), comprising 0.5, 0.4, 0.3 and 0.3 per cent of the Australian population respectively.

In 1986, 77.6 per cent of the population was born in Australia. Of these, 74.9 per cent reported Australia as the birthplace of both their parents. This implies that 58.1 per cent of the total population of Australia are at least second generation Australians. A further 13.7 per cent of the Australian-born population (10.6 per cent of the total population) had one parent born in Australia. Conversely, 41.9 per cent of the total population were either born overseas or had at least one parent born overseas.

BIRTHPLACE OF PARENTS OF AUSTRALIAN BORN PERSONS, AUSTRALIA, CENSUS 1986

Birthplace of parents	*Numbers*	*Percentage*
Both parents born in Australia	9,070,739	74.9
1 parent born in Australia, 1 born overseas or not stated	1,657,548	13.7
Other	1,382,169	11.4
Total	**12,110,456**	**100.0**

Citizenship

The grant of citizenship is controlled by the *Australian Citizenship Act 1948*. Prior to 26 January 1949, aliens who were naturalised became British subjects and, with the introduction of the Act, all such persons automatically became Australian citizens.

Citizenship may be acquired by birth in Australia provided that at the time of birth one of the parents is an Australian citizen or legal resident of Australia, by birth abroad to an Australian parent, or by grant of citizenship to a person resident in Australia under conditions prescribed in the Act. All persons are now eligible for the grant of Australian citizenship provided that they have resided in Australia for at least two years, are of good character, have an adequate knowledge of English and of the responsibilities and privileges of citizenship, and intend to reside permanently in Australia.

At the 1981 Census, 88.7 per cent of the population were Australian citizens, with 11.9 per cent of these being born overseas.

COUNTRY OF CITIZENSHIP, AUSTRALIA, 1981

Country	*Persons*	*Percentage*
Australia—		
Born in Australia	11,393,861	78.2
Born overseas	1,537,212	10.5
Other Commonwealth countries	961,155	6.6
Non Commonwealth countries	452,499	3.1
Stateless and Not-stated	231,603	1.6
Total	**14,576,330**	**100.0**

Religion

Details on religious affiliation have been collected in all Australian censuses, however since the 1933 Census, it has been clearly stated on the census form that the question on religion is not obligatory. This clarification resulted in a large increase in the numbers of people responding 'no religion' or simply not answering the question, with these responses combined increasing from 2.4 per cent in 1921 to 13.2 per cent in 1933. By 1981, 22.3 per cent of the population described themselves as either having 'no religion' or did not answer the question.

Census data show that the Australian population is predominantly Christian with similar proportions associating themselves with the two major groups, the Church of England and the Catholic Church (26.1 per cent and 26.0 per cent respectively at the 1981 Census).

MAJOR RELIGIOUS GROUPS, AUSTRALIA, SELECTED CENSUS DATES

(per cent)

Year	*Church of England*	*Catholic*	*Other Christian*	*Total Christian*	*Non-Christian*	*Not stated or No Religion*	*Total*
1861	(*a*) 43.9	22.3	27.4	93.6	} 6.4 {		100.0
1901	40.3	23.0	34.2	97.5	1.4	1.0	100.0
1921	43.7	21.6	31.7	96.9	0.7	2.4	100.0
1933	38.7	19.6	28.1	86.4	0.4	13.2	100.0
1947	39.0	20.9	28.1	88.0	0.5	11.5	100.0
1961	34.9	24.9	28.4	88.3	0.7	11.1	100.0
1971	31.0	27.0	28.2	86.2	0.8	13.1	100.0
1981	26.1	26.0	24.3	76.4	1.4	22.3	100.0

(*a*) Includes Protestant undefined.

The remainder of the Christian population, amounting to 24 per cent of the total population at the 1981 Census, is dispersed between several other groups, with only four denominations consisting of more than 2.0 per cent of the population; the Uniting Church (4.9 per cent), Presbyterian (4.4 per cent), Methodist (3.4 per cent) and Orthodox (2.9 per cent).

There has been a slight increase in the proportion of persons of non-Christian religions since 1947, from 0.5 per cent to 1.4 per cent in 1981. At the 1981 Census, Muslims comprised 38.9 per cent of the non-Christian response, Hebrews 31.4 per cent and Buddhists 17.8 per cent.

Households

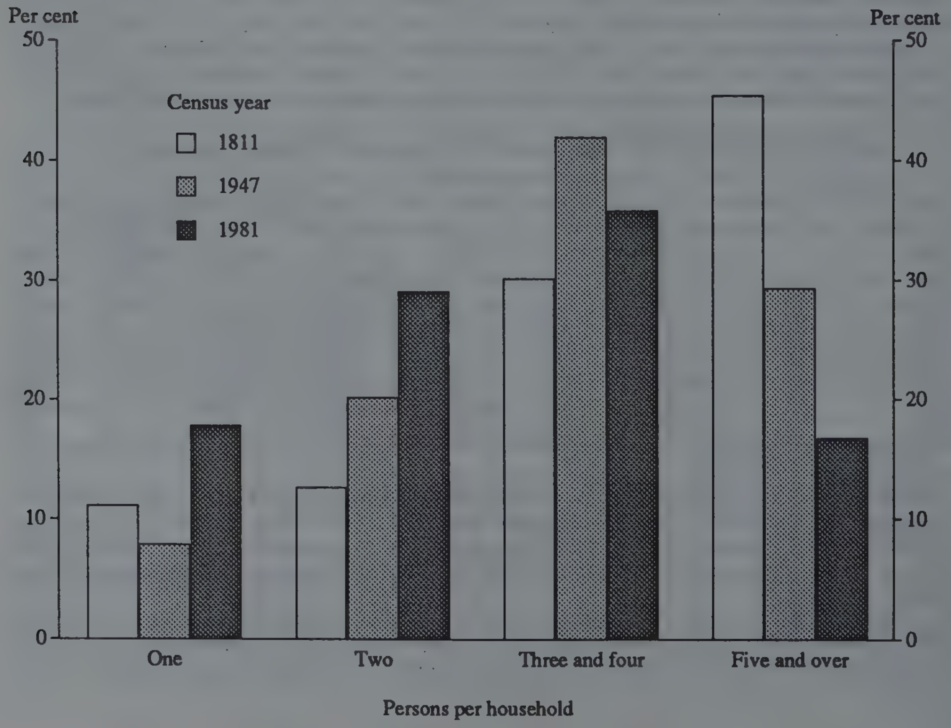
The incidence of household formation in Australia has exceeded population growth rates since 1911, with the average number of persons per household declining from 4.5 in 1911 to 2.9 in 1986. Major declines occurred throughout the period in the numbers and proportion of households with five or more persons. Much of the decline in the number of persons per household this century can be attributed to reductions in completed family size. There has been considerable growth in one and two-person households for most of this period, these households almost doubling as a proportion of all households from 24.1 per cent in 1911 to 47.2 per cent by 1981.

POPULATION IN PRIVATE HOUSEHOLDS, AUSTRALIA

Year	*Persons in private households*	*Private households*	*Persons per private household*
1911	4,055,926	894,389	4.53
1921	4,875,428	1,107,010	4.40
1933	6,164,709	1,509,671	4.08
1947	7,026,760	1,873,623	3.75
1954	8,314,362	2,343,421	3.55
1961	9,870,494	2,781,945	3.55
1966	10,955,250	3,155,340	3.47
1971	12,155,386	3,670,554	3.31
1976	12,942,708	4,140,521	3.12
1981	13,918,445	4,668,909	2.98
1986	14,920,230	5,187,422	2.88

The incidence of household formation and household size has been affected by social and economic factors, such as the availability of mortgage finance schemes repayable in instalments—which were introduced shortly before the 1920s—as well as demographic changes.

HOUSEHOLD SIZE: NUMBER OF PERSONS IN HOUSEHOLD, AUSTRALIA



During the 1960s and 1970s, for example, there was an increase in the proportion of the population aged 15–29 years—prime years for household formation as young adults leave the parental home—from 20.6 per cent in 1961 to 25.6 per cent by 1976. This increase resulted both from high birth rates during the post World War II 'baby boom' years after 1947, and high rates of immigration of those aged 20–29 years during the 1960s. The rapid rise in numbers of 15–29 year olds coincided with a period of economic growth and high rates of employment until the 1970s, providing a favourable environment for household formation.

Increases in the number of households have also been affected by a complex combination of factors at older ages. The proportion of the population aged 65 years and over has increased throughout most of the last century, as a result of increases to life expectancy, while both completed family size and age at completion have generally declined. Thus, older families are likely to experience several years of 'empty nesting', that is time lived in the household without dependants after children leave home. There has been a tendency for increasing numbers of older couples and older persons who are widowed, particularly females, to remain as separate households to a later age—with long-term cumulative affects on the total number of households.

Only a small proportion of households include more than one family, some 3 per cent at the 1981 Census. Improved data on family relationships are available from the 1986 Census, where information coded on family relationships includes members of the family temporarily absent from the household on Census night.

Some information on the structure of Australian families is available from the *1982 Family Survey* (4408.0). This survey indicated that almost 90.0 per cent of the population lived with other family members, while the remaining individuals were most likely to be living alone (67.5 per cent) rather than with persons to whom they were unrelated (32.5 per cent). Among family groups, 87.7 per cent were married couple families, 10.7 per cent were one parent families, while the rest comprised persons related other than as spouse or parent/offspring. Some 5.5 per cent of married couples and one parent families had relatives other than offspring living with them.

An estimated 66.1 per cent of all families had offspring living in the household, and among families with offspring present, 80.7 per cent had at least one dependent child present (i.e. aged less than 15 years, or 15–20 if in full-time study).

Overall 33.7 per cent of families with offspring had only one offspring present in the household, while 72.7 per cent had either one or two. The average number of offspring present was 2.1 per family, 1.6 dependent and 0.5 non-dependent. One parent families, however, were smaller than married couple families, with 43.0 per cent of one parent families with dependent children consisting of only one child compared with 22.7 per cent of married couple families with dependent children.

FAMILY TYPE AND COMPOSITION, AUSTRALIA, 1982 (*a*)
('000)

Married couples (*b*) (*c*)—	
Without offspring—	1,317.0
Living alone	1,278.9
With other relatives present	38.1
With offspring—	2,254.7
Non-dependent offspring only	343.0
Non-dependent offspring and other relatives	19.2
At least one dependent child (*d*)	1,826.6
At least one dependent child and other relatives (*d*)	66.0
One parent family (*b*)—	
With offspring—	436.6
Non-dependent offspring only	151.1
Non-dependent offspring and other relatives	6.3
At least one dependent child (*d*)	262.1
At least one dependent child and other relatives (*d*)	17.1
Other family groups	
Persons related other than as spouse or parent/offspring	62.1
All family groups	**4,070.5**

(*a*) Figures may not total due to rounding. (*b*) Previously married persons without partners or offspring present or not living with other relatives are not classified as 'Families' and not included in this table. (*c*) 'Married Couples' includes de-facto couples. (*d*) Includes families with dependent children only and families with both dependent and non-dependent offspring present. The term 'dependent' is defined as a child aged less than 15 years or 15-20 years if in full-time study.

VITAL STATISTICS

Registration of vital events, i.e. births, deaths and marriages, has been compulsory throughout Australia since 1856. The total number of these registrations is available for each year since the 1860s and more detailed information since the 1910s. The number of divorces has been published since 1891, but other details have been published on a consistent basis only since the 1950s.

Births

Current fertility levels in Australia are lower than at any time since European settlement. Crude birth rates declined from 42.6 per thousand population in 1860 to 27.2 in 1901 and to 15.2 in 1986. Australia's current fertility rates, however are higher than several other industrialised countries in Northern Europe and Japan.

CRUDE BIRTH RATES AND TOTAL FERTILITY RATES, LOW FERTILITY COUNTRIES

	Crude birth rate		*Total fertility rate (a)*	
Country	*1970*	*1980s*	*1970*	*1980s*
Australia	20.6	15.2 (1986)	2.86	1.87 (1986)
Canada	17.4	15.0 (1983)	2.26	1.64 (1983)
Denmark	14.4	10.6 (1985*p*)	1.97	1.40 (1984)
France	16.7	14.1 (1985*p*)	2.47	1.82 (1985*p*)
Federal Republic of Germany	13.3	13.3 (1985*p*)	2.01	1.28 (1985*p*)
Japan	18.8	12.4 (1984)	2.07	1.78 (1984)
New Zealand	22.1	15.9 (1985*p*)	3.16	1.93 (1984)
Norway	16.6	12.1 (1984)	2.49	1.65 (1984)
Sweden	13.7	11.8 (1985*p*)	1.94	1.61 (1983)
Switzerland	15.8	11.5 (1984*p*)	2.09	1.51 (1985*p*)
U.K.	16.2	12.9 (1984)	2.38	1.76 (1984)
U.S.A.	18.2	15.7 (1985*p*)	2.46	1.75 (1983*p*)

(*a*) Per woman.

Sources: United Nations. *Demographic Yearbook 1985*. New York, except total fertility rates 1980s, France, Federal Republic of Germany, Switzerland, U.S.A. in Muñoz-Perez, F. "Changements récents de la fécondité en Europe occidentale et nouveaux traits de la formation des familles", *Population*. Vol. 41, 3, 1986.

Despite an overall fertility decline, the number of births has shown an increasing trend. This has been caused by a continued increase in the number of women of reproductive ages. However, the rate of increase has varied, with annual average births rising from over 50,000 to 100,000 in the 25 year period between 1861–65 and 1886–90, but taking more than the next 50 years to reach 150,000 by 1944. Birth numbers then increased very rapidly in the immediate post-war period to reach over 200,000 a year by 1952 and exceeded 250,000 per year between 1969 and 1972, reaching a peak of 276,400 in 1971. The sharp rise in births during the late 1960s and early 1970s is due to the 'echo-effect' as children of the post-World War II 'baby-boom' moved into their childbearing years and started their own families. Between 1981 and 1985 the number of births averaged 240,000 annually.

Although fertility decline is evident since the 1860s, this trend has not been continuous, and at times fertility has increased. Major declines continued well into the depression years of the 1930s, but then fertility recovered in the following years to 1961. Despite temporary halts between 1965 and 1971, fertility has generally declined until the present time.

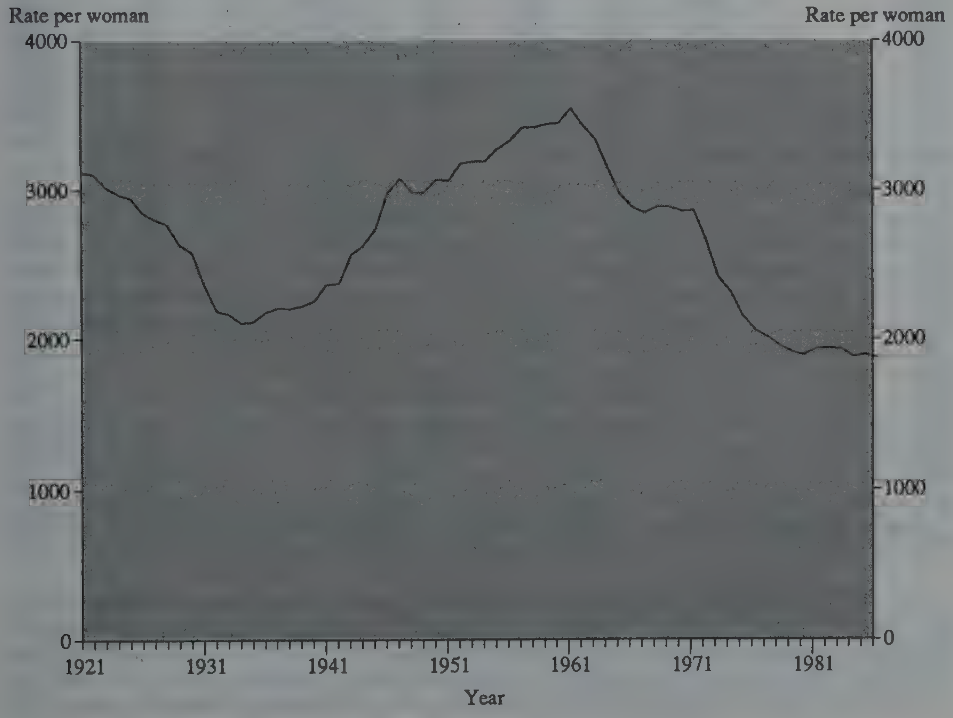
A number of changes occurred from the mid-1930s which contributed to increasing fertility levels until recent times. The proportion of women marrying began to rise, while the proportion remaining childless fell. In the late 1940s, the increasing number of births from these trends coincided with births that had been postponed during World War II. However, high levels of fertility were sustained during the 1950s as the timing of births changed. Women began marrying earlier and having their children at a younger age, which is reflected in the rapid rise of the age-specific birth rate for the 20–24 year age group. In addition birth rates for women up to age 40 remained higher than they had during the early 1930s depression years, resulting in increasing levels of total fertility.

AGE-SPECIFIC BIRTH RATES AND TOTAL FERTILITY: AUSTRALIA (*a*)

Period	*Age group (years)* 15–19(*b*)	20–24	25–29	30–34	35–39	40–44	45–49(*c*)	*Total fertility*
AVERAGE ANNUAL RATES								
1921–25	27.3	133.7	167.0	137.0	96.9	40.4	4.2	3.032
1926–30	29.7	125.3	152.5	119.3	81.4	33.5	3.6	2.726
1931–35	25.6	101.8	124.1	96.8	61.6	24.8	2.7	2.186
1936–40	24.2	108.4	131.9	98.3	57.6	20.1	2.0	2.213
1941–45	23.9	126.9	152.8	114.3	66.3	21.1	1.7	2.535
1946–50	33.1	164.2	183.3	126.6	72.3	22.7	1.8	3.020
1951–55	39.5	192.8	193.0	123.5	65.1	20.5	1.5	3.180
1956–60	44.2	216.4	211.5	126.1	63.9	19.0	1.5	3.412
1961–65	46.5	204.0	207.2	122.4	59.2	17.5	1.2	3.289
1966–70	49.3	172.7	187.6	103.0	46.9	12.9	1.0	2.867
1971–75	48.0	154.0	166.9	85.0	33.7	8.5	0.6	2.484
1976–80	30.7	116.4	143.9	73.8	23.8	4.8	0.3	1.968
1981–85 (*d*)	25.6	100.8	144.8	82.0	25.4	4.4	0.3	1.916
ANNUAL RATES								
1981	28.2	107.5	145.2	77.6	24.5	4.5	0.3	1.938
1982	27.4	104.0	145.0	80.6	25.6	4.5	0.3	1.937
1983	26.5	102.7	146.1	81.5	25.0	4.3	0.2	1.932
1984 (*d*)	23.6	96.0	143.4	83.1	25.5	4.4	0.3	1.881
1985 (*d*)	22.4	94.0	144.2	87.1	26.5	4.3	0.3	1.894
1986	21.7	89.6	142.5	88.9	27.3	4.3	0.2	1.873

(*a*) Excludes full-blood Aboriginals prior to 1966. (*b*) Includes births to mothers aged less than 15. (*c*) Includes births to mothers aged 50 and over. (*d*) Rates are adjusted for late registrations of New South Wales births in 1984.

TOTAL FERTILITY RATES, AUSTRALIA (a)



(a) Excludes full-blood Aboriginal population before 1966.

From the late 1950s and the early 1960s, fertility levels began to decline. In 1961, oral contraception became widely available in Australia contributing to, or accelerating, fertility decline, which was most noticeable among the older age-groups as women began completing child-bearing earlier. Changes to child-bearing patterns also occurred at younger ages. The duration between marriage and first nuptial confinement began to increase, and by 1965 the proportion of women who were pregnant at the time of marriage began to decrease.

MARRIED FEMALES UNDER 45 YEARS OF AGE AT TIME OF MARRIAGE: YEAR MARRIED AND TIMING OF FIRST NUPTIAL CONFINEMENT

	Percentage of married females under 45 years of age at time of marriage							*Number of brides aged under 45 years*
		Having the first nuptial confinement before the end of a given year of marriage duration (b)						
Year of marriage	*Premaritally pregnant (a)*	*1*	*2*	*3*	*4*	*5*	*10*	
	— cumulative per cent —							number
1947	14.5	35.5	61.9	72.8	78.5	81.9	87.8	73,427
1948	14.1	33.8	60.7	72.2	78.3	82.1	88.3	71,867
1949	14.2	34.0	61.6	73.5	80.0	83.9	90.5	69,863
1950	13.9	33.0	60.1	71.7	78.0	81.8	88.1	72,221
1951	13.9	33.2	59.5	70.6	76.6	80.3	86.4	73,718
1952	14.7	34.7	60.7	71.8	77.9	81.7	87.8	70,659
1953	15.7	35.7	61.9	73.3	79.7	83.5	89.9	67,114
1954	16.2	36.0	62.1	73.5	80.0	83.8	90.1	67,585
1955	16.8	36.9	63.5	75.0	81.3	85.1	91.7	68,564
1956	18.0	38.6	65.7	77.2	83.5	87.4	93.9	68,032
1957	18.1	38.5	64.7	75.6	81.8	85.6	91.7	69,983
1958	18.8	39.4	65.5	76.2	82.3	86.0	92.0	70,395
1959	19.8	40.6	66.8	77.6	83.6	87.1	92.8	70,553
1960	21.1	41.8	67.5	78.3	84.4	88.1	93.8	71,679
1961	22.0	42.2	66.9	77.9	84.3	88.2	94.2	72,727
1962	22.5	40.9	64.4	75.9	82.8	87.0	93.2	75,176
1963	23.3	40.0	62.8	75.3	83.1	87.8	94.4	77,031
1964	23.0	37.3	59.3	72.5	80.9	86.2	93.1	82,025
1965	22.0	34.6	55.7	69.4	78.4	83.9	91.1	89,377
1966	21.7	33.5	54.6	69.1	78.7	84.6	91.9	91,718
1967	21.4	32.5	53.6	68.3	78.2	84.2	91.5	95,474
1968	21.1	31.2	51.9	67.0	77.1	82.9	90.8	101,766
1969	20.3	29.6	50.5	65.3	75.3	81.3	89.7	107,798
1970	20.5	29.4	49.5	63.7	73.7	80.0	89.2	111,211
1971	19.8	28.1	46.5	60.6	70.6	77.0	87.0	112,817
1972	18.0	25.5	43.7	57.9	68.0	74.9	86.2	109,007
1973	15.6	22.8	41.0	54.7	64.8	72.0	84.5	107,563
1974	13.4	20.6	38.0	51.5	61.7	69.0	82.4	105,759
1975	12.2	19.3	36.9	50.5	60.8	68.5	82.6	98,951
1976	10.9	18.0	35.0	47.5	57.2	64.5	76.2	103,108
1977	11.1	17.6	34.1	46.9	57.0	64.5	—	98,551
1978	11.3	17.7	34.6	47.8	57.8	65.1	—	96,859
1979	11.3	17.7	35.4	48.8	58.7	65.7	—	98,286
1980	11.5	17.9	35.7	48.9	58.6	65.5	—	103,019
1981	11.3	17.9	33.5	48.3	57.8	64.6	—	107,855
1982	10.4	16.8	33.7	46.0	55.3	—	—	111,295
1983	9.9	16.0	33.0	45.8	—	—	—	108,931
1984	10.1	16.6	34.8	—	—	—	—	102,785
1985	9.2	15.4	—	—	—	—	—	109,377

(*a*) Premaritally pregnant comprises wives who delivered their first child within marriage duration of 0–7 completed months. (*b*) Include premarital pregnancies.

In the 1970s, fertility declines became obvious across all age-groups, falling rapidly between 1971 and 1980, and marginally since then. This decline has been attributed to demographic, social, economic and attitudinal changes of the 1970s, which individually or collectively influenced fertility behaviour during this period. Between 1971 and 1986, the total fertility rate for all ages declined by 35 per cent. The largest declines in age-specific fertility rates occurred to younger women aged 15–29 years, in particular the 20–24 age group. Compared with women in the 1960s, women in the 1980s are more likely to defer and restrict child-bearing to the middle range of their reproductive years. In 1961–65, 81.0 per cent of births occurred to women aged 20–34. By 1986, the corresponding figure was 86.0 per cent. Women in the 25–29 age group maintained the highest fertility rates.

Concurrent with the downward movement that has occurred in the levels of fertility, the family building patterns of couples has changed. An increasing proportion of total births has now been occurring outside marriage, and for those occurring within marriage, concentration has been on the first and second order births.

Confinements resulting in ex-nuptial births have increased continually as a proportion of total confinements from the 1950s to the present time increasing from 4.5 per cent in 1956–60 to 16.9 per cent in 1986. The median age of ex-nuptial mothers has been lower than that at first nuptial confinement and it seems likely that ex-nuptial births are predominantly first order births.

TOTAL CONFINEMENTS BY NUPTIALITY AND PREVIOUS ISSUE TO THE CURRENT MARRIAGE OF MOTHER (NUPTIAL BIRTHS), AUSTRALIA *(a)*

		Married mothers with previous issue to the current marriage of							
	Ex-nuptial confinements	*0*	*1*	*2*	*3*	*4*	*5 or more*	*Not stated*	*Total*
				ANNUAL AVERAGES					
1956–1960 . . .	9,918	65,695	57,532	40,920	22,968	11,299	11,633	–	219,965
1961–1965 . . .	13,655	69,281	57,971	40,818	23,612	12,125	13,022	–	230,484
1966–1970 . . .	18,707	80,999	62,930	37,446	18,899	8,961	9,700	–	237,644
1971–1975 . . .	24,299	88,120	74,641	36,914	15,216	6,006	5,765	12	250,973
1976–1980 . . .	24,851	77,877	69,291	34,288	11,119	3,332	2,451	15	223,224
1981–1985 . . .	34,248	82,279	70,089	34,399	11,354	3,093	1,918	103	237,484
				ANNUAL TOTALS					
1981	30,956	82,476	67,627	35,445	11,750	3,282	1,993	6	233,535
1982	32,679	83,300	69,963	34,670	11,631	3,193	2,016	–	237,454
1983	35,335	83,466	70,427	34,081	11,343	3,108	1,878	476	240,111
1984(*b*)	34,337	79,295	69,312	33,027	10,802	3,013	1,825	32	231,643
1985(*b*)	37,933	82,860	73,114	34,774	11,246	2,867	1,877	–	244,672
1986	40,580	80,563	70,017	33,937	10,955	2,904	1,723	20	240,699

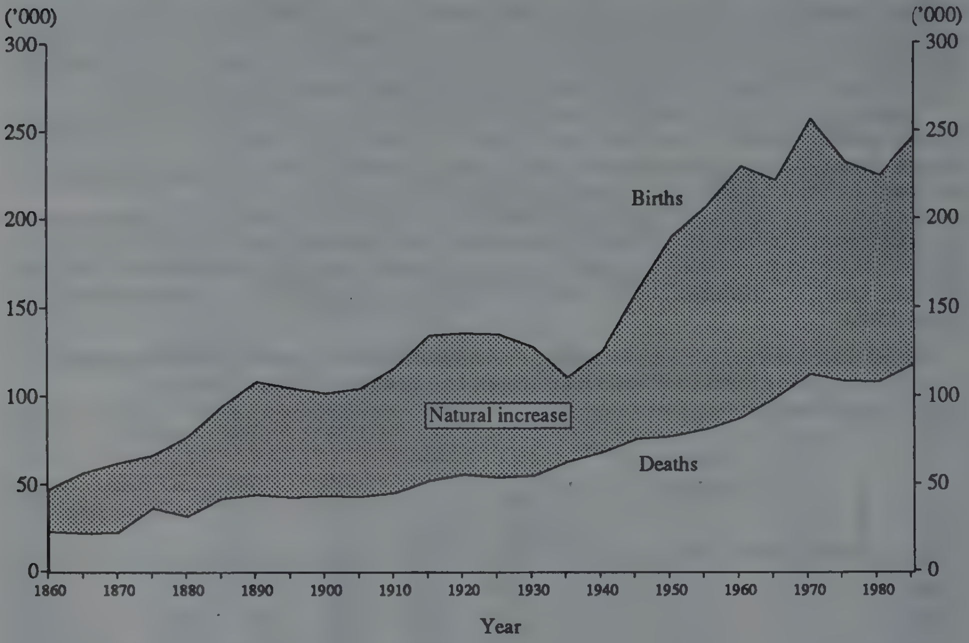
(*a*) Excludes full-blood Aboriginals prior to 1966. (*b*) These figures have been affected by late registration in New South Wales.

Since the 1950s there has been a decline in the proportion of females having three or more children in their marriage. Between 1956 and 1960, 58.7 per cent of nuptial confinements resulted in the first or second child of a marriage. In 1986, 75.2 per cent of confinements resulted in first or second children. The proportion of nuptial confinements that produced a fourth or higher order birth declined from 21.8 per cent between 1956 and 1960 to 7.8 per cent in 1986.

Deaths

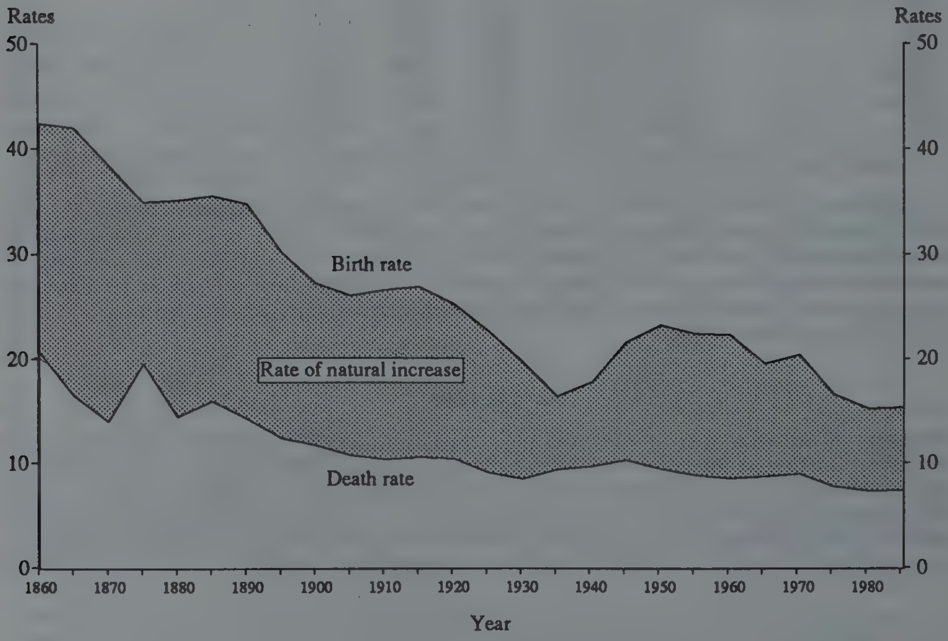
Numbers of deaths a year in Australia have risen from 23,400 in 1860 to 118,800 in 1985. However, relative to the growth of the population throughout that period, crude death rates per 1,000 population have fallen—from 20.9 in 1860 to 10.7 in 1911 and to 7.4 in 1985. With the exception of the years during World War II, declines in crude death rates have been virtually continuous. In comparison with other countries, Australia ranks amongst those with the lowest mortality levels and the highest expectations of life.

BIRTHS AND DEATHS(a), AUSTRALIA



(a) Excludes full-blooded Aboriginals before 1966.

RATES OF BIRTHS AND DEATHS(a), AUSTRALIA, 1860-1985(b)



(a) Per 1000 mean population. Excludes full-blooded Aboriginals before 1966.

(b) There is a break in continuity due to revision in the methods used to calculate population estimates between 1961 and 1962, and between 1971 and 1972.

EXPECTATION OF LIFE AT BIRTH AND INFANT MORTALITY RATES IN SELECTED LOW MORTALITY COUNTRIES, RECENT YEARS

(*Source:* United Nations, *Demographic Yearbook*, 1984 and 1985 (except figures for Australia).)

	Infant mortality		*Life expectancy at birth*		
Country	*Rate*	*Year*	*Males*	*Females*	*Year*
Australia	10.0	(1985)	72.3	78.8	(1985)
Canada	8.5	(1983)	71.9	78.9	(1980–82)
Denmark	7.7	(1984)	71.5	77.5	(1982–83)
England and Wales	9.6	(1984*a*)	71.3	77.4	(1981–83)
Federal Republic of Germany	9.8	(1985p)	70.5	77.1	(1981–83)
France	8.0	(1985p)	70.4	78.5	(1981)
Italy	10.9	(1985p)	69.7	75.9	(1974–77)
Japan	6.0	(1984)	74.5	80.2	(1984)
Netherlands	7.9	(1985p)	72.8	79.5	(1982–83)
New Zealand	10.8	(1985p)	71.2	77.7	(1984)
Sweden	6.7	(1985p)	73.6	79.6	(1983)
Switzerland	7.5	(1983)	72.7	79.6	(1981–82)
U.S.A.	10.5	(1985p)	70.8	78.2	(1982)

(*a*) Total United Kingdom.

The crude death rate, as a measure of mortality, is distorted by changes in the age structure of the population over time. The fall in death rates is considerably greater if the population is standardised in terms of age structure. Using 1911 as a base year, the age adjusted death rate fell from 11.9 to 5.0 per thousand for males and from 9.5 to 2.8 per thousand for females by 1985.

INDICATORS OF MORTALITY, AUSTRALIA(*a*), 1861–1985

	Crude death rates		*Age-adjusted death rates*		*Life-table death rates(c)*		*Infant mortality rates*
Year	*Males*	*Females*	*Males*	*Females*	*Males*	*Females (Years)*	
1861	(17.3)		n.a.	n.a.	n.a.	n.a.	n.a.
1881	(14.7)		n.a.	n.a.	n.a.	n.a.	115.8
1891	(14.8)		n.a.	n.a.	21.2	19.7(1881–90)	115.3
1901	(12.2)		n.a.	n.a.	19.6	18.3(1891–1900)	103.6
1911	11.9	9.5	11.9	9.5	18.1	17.0(1901–10)	68.5
1921	11.1	8.7	10.7	8.4	16.9	15.8(1920–22)	65.7
1933	9.9	7.9	8.6	6.5	15.8	14.9(1932–34)	39.5
1947	10.7	8.7	7.5	5.2	15.1	14.2(1946–48)	28.5
1955	10.2	8.1	7.1	4.4	14.9	13.8(1953–55)	22.0
1965	9.8	7.8	7.0	4.1	14.8	13.5(1965–67)	18.5
1975	8.7	7.0	6.2	3.4	14.4	13.2(1975–77)	14.3
1985(*b*)	8.2	7.0	5.0	2.8	13.8	12.7	10.0

(*a*) Excludes full-blood Aboriginal population prior to 1966. (*b*) Adjusted for late registrations in New South Wales. (*c*) Life tables up to 1975–77 are official life tables compiled by the Australian Government Actuary. The 1985 life table was compiled by the Australian Bureau of Statistics.

The decline in death rates has been brought about primarily through improvements to community health care and advances in medical science and technology. A series of comprehensive health Acts were passed towards the end of the 19th century and efforts were made to improve infant nutrition. These advances were followed by improvements to hospital care and antiseptic surgery, the discovery of antibiotics and the development of immunisation programs. As a result, many of the infectious and diarrhoeal diseases, maternal mortality, pneumonia and tuberculosis were brought under control by the 1950s with consequent reductions in mortality rates from these causes.

In Australia, as in most other countries, females have lower death rates than males. In 1985 the female death rate in many age groups was about half that of males. The relative difference between death rates for males and females was greatest in the age group 15 to 24 years where in 1985 the female rate was about one-third that of males. The overall effect of these differences in death rates has been to increase the proportion of females in the older age groups of the population.

AGE-SPECIFIC DEATH RATES BY SEX, AUSTRALIA *(a)*

Period	*Age group (years)* 0	*1–4*	*5–9*	*10–14*	*15–19*	*20–24*	*25–29*	*30–34*	*35–39*	*40–44*	*45–49*	*50–54*	*55–59*	*60–64*	*65–69*	*70–74*	*75–79*	*80–84*	*85 and over*
									MALES										
Average annual rates—																			
1921–25	64.2	5.7	1.8	1.5	2.2	3.0	3.4	3.9	5.2	6.8	9.5	12.9	18.2	28.1	41.5	63.5	101.1	160.0	305.2
1926–30	57.7	5.2	1.6	1.3	2.1	2.8	3.2	3.7	4.6	6.2	8.9	12.7	17.8	26.5	40.7	61.5	101.2	152.0	335.8
1931–35	46.0	4.0	1.6	1.3	1.8	2.3	2.5	3.0	4.0	5.4	7.8	11.6	17.6	26.3	40.4	61.9	99.3	156.6	258.8
1936–40	43.2	3.6	1.5	1.2	*(b)*	*(b)*	*(b)*	*(b)*	*(b)*	*(b)*	*(b)*	11.8	17.8	27.4	41.3	63.0	100.0	158.2	277.4
1941–45	38.8	3.2	1.3	1.1	*(b)*	*(b)*	*(b)*	*(b)*	*(b)*	*(b)*	*(b)*	11.3	17.4	27.8	42.9	64.6	101.2	155.2	289.8
1946–50	30.1	1.9	0.9	0.8	1.4	1.8	1.7	2.0	2.6	4.1	6.8	11.1	17.6	27.4	42.4	64.0	99.3	149.7	255.3
1951–55	26.0	1.7	0.7	0.7	1.6	1.9	1.7	1.8	2.5	3.7	6.2	10.8	17.4	27.4	42.2	64.7	99.7	147.2	254.1
1956–60	23.3	1.3	0.6	0.5	1.4	1.8	1.5	1.8	2.3	3.5	5.9	10.0	16.9	26.6	42.0	63.5	97.5	145.0	251.2
1961–65	21.7	1.1	0.5	0.5	1.2	1.7	1.5	1.7	2.4	3.7	6.2	10.3	16.8	27.4	42.2	64.7	97.2	145.0	243.7
1966–70	20.4	1.0	0.5	0.5	1.4	1.8	1.5	1.6	2.4	3.8	6.2	10.4	17.2	27.8	44.3	67.0	102.7	149.2	245.9
1971–75	18.4	0.9	0.4	0.4	1.5	1.7	1.3	1.4	2.1	3.4	6.0	9.6	15.9	25.5	39.3	61.2	95.3	141.2	231.7
1976–80	13.6	0.7	0.3	0.4	1.4	1.7	1.4	1.3	1.9	3.0	5.2	8.6	13.8	22.2	35.3	54.2	87.7	127.9	210.7
1981–85*(c)*	11.1	0.6	0.3	0.3	1.1	1.5	1.3	1.3	1.5	2.4	4.1	7.2	12.2	19.3	30.0	49.5	78.2	119.6	208.7
Annual rates—																			
1981	11.5	1.6	0.3	0.3	1.2	1.5	1.3	1.2	1.7	2.6	4.5	7.9	12.9	19.8	32.3	52.0	80.2	121.1	208.1
1982	11.8	0.7	0.4	0.4	1.3	1.6	1.4	1.3	1.6	2.5	4.5	7.5	12.7	20.0	33.1	52.0	82.8	124.8	217.1
1983	10.5	0.6	0.3	0.3	1.1	1.5	1.4	1.2	1.4	2.3	4.0	7.3	12.3	19.0	30.8	48.0	77.2	116.6	201.1
1984*(c)*.	10.4	0.6	0.2	0.3	1.0	1.5	1.2	1.3	1.4	2.4	3.8	6.8	11.8	18.9	29.9	48.5	75.4	115.6	203.6
1985*(c)*.	11.3	0.6	0.3	0.3	1.1	1.6	1.3	1.3	1.4	2.2	3.7	6.6	11.5	18.7	29.8	47.2	75.7	119.8	213.7
									FEMALES										
Average annual rates—																			
1921–25	51.2	4.9	1.5	1.2	1.8	2.8	3.4	3.9	4.8	5.3	6.8	9.2	12.7	19.3	30.3	49.0	83.4	138.6	264.7
1926–30	46.0	4.8	1.3	1.0	1.6	2.7	3.3	3.5	4.3	5.0	6.6	8.8	12.3	18.8	30.0	47.8	81.8	126.7	285.8
1931–35	36.3	3.5	1.2	0.9	1.4	2.1	2.7	3.0	3.8	4.4	6.0	8.5	11.6	17.9	29.8	47.1	77.4	127.6	234.6
1936–40	34.2	3.2	1.1	0.8	1.2	1.9	2.4	2.7	3.3	4.1	5.7	8.0	11.3	17.9	28.9	46.5	79.7	124.9	244.8
1941–45	30.9	2.6	1.0	0.7	1.0	1.4	1.9	2.2	2.9	3.7	5.4	7.8	11.1	17.6	29.0	47.9	80.2	125.7	243.5
1946–50	23.7	1.6	0.6	0.5	0.7	1.0	1.3	1.6	2.2	3.2	4.9	7.3	10.3	16.2	26.0	44.6	74.7	120.8	221.8
1951–55	20.6	1.4	0.5	0.4	0.6	0.7	0.9	1.2	1.8	2.7	4.4	6.7	9.5	15.1	24.6	41.3	71.6	118.5	220.2
1956–60	18.7	1.1	0.4	0.4	0.5	0.6	0.7	1.0	1.6	2.4	3.9	5.7	8.7	13.8	23.0	38.8	63.9	113.5	215.6
1961–65	17.0	0.9	0.4	0.3	0.5	0.6	0.7	1.0	1.5	2.3	3.7	5.6	8.3	13.6	21.7	37.4	63.3	107.5	205.1
1966–70	15.7	0.8	0.3	0.3	0.6	0.6	0.7	0.9	1.5	2.3	3.7	5.9	8.7	13.6	22.1	37.3	63.6	105.9	201.0
1971–75	14.0	0.7	0.3	0.2	0.6	0.5	0.6	0.8	1.3	2.1	3.5	5.2	8.0	12.2	19.4	33.1	57.3	97.4	187.9
1976–80	10.7	0.5	0.2	0.2	0.5	0.5	0.5	0.7	1.0	1.8	2.8	4.5	6.8	10.8	16.9	27.9	48.4	84.0	168.4
1981–85*(c)*	8.7	0.5	0.2	0.2	0.4	0.5	0.5	0.6	0.9	1.4	2.4	3.9	6.1	9.6	15.3	25.4	43.3	76.9	162.6
Annual rates—																			
1981	8.8	0.5	0.2	0.2	0.4	0.5	0.5	0.6	0.9	1.4	2.7	3.8	6.2	9.7	15.7	25.5	44.3	76.0	160.4
1982	9.2	0.5	0.2	0.2	0.4	0.5	0.5	0.5	0.8	1.5	2.5	4.2	6.3	10.1	16.0	25.7	45.3	79.7	171.2
1983	8.8	0.5	0.2	0.2	0.4	0.5	0.5	0.6	0.9	1.3	2.3	4.0	6.1	9.7	15.2	25.2	42.6	74.5	154.9
1984*(c)*	7.9	0.4	0.2	0.2	0.4	0.5	0.5	0.6	0.9	1.4	2.2	3.8	5.7	9.5	15.2	25.2	41.3	76.4	158.4
1985*(c)*	8.9	0.4	0.2	0.2	0.4	0.5	0.5	0.6	0.8	1.2	2.3	3.7	6.0	9.1	14.6	25.6	43.0	77.8	168.0

(a) Excludes full-blood Aboriginals prior to 1966. *(b)* Rates are not available as population estimates for males in these age groups exclusive of defence personnel were not compiled for the period September 1939 to June 1947. *(c)* Adjusted for late registrations in New South Wales.

Concurrent with the decline in death rates has been a rise in life expectancy at birth, increasing for males from 47.2 years to 71.2 years between the periods 1881–1890 and 1980–1982, and correspondingly for females from 50.8 years to 78.3 years. Female life expectancy at birth has exceeded that of males throughout the period, with the difference increasing until 1980–1982. Contributing to the increase in life expectancy at birth is the reduction in infant mortality, falling from rates of 115.8 per thousand in 1881 to 10.0 per thousand by 1985. These changes reflect a very significant improvement in chances of survival from birth to age 1 year. The considerable difference between life expectancy at birth and at age 1 year which existed in the 1880s has disappeared and life expectancy at birth now exceeds life expectancy at age 1 year.

LIFE EXPECTANCY AT VARIOUS AGES, AUSTRALIA (*a*)

	Ages									
	0		*1*		*25*		*45*		*65*	
Year	*Males*	*Females*	*Males*	*Females*	*Males*	*Females*	*Males*	*Females*	*Males*	*Females*
1881–90	47.2	50.8	53.3	56.4	37.1	39.7	23.0	25.6	11.1	12.3
1891–1900	51.1	54.8	56.9	59.9	38.9	41.7	24.0	26.7	11.3	12.8
1901–10	55.2	58.8	60.0	62.9	40.6	43.4	24.8	27.6	11.3	12.9
1920–22	59.2	63.3	62.7	66.0	42.7	45.7	26.0	29.0	12.0	13.6
1932–34	63.5	67.1	65.5	68.7	44.4	47.2	26.9	29.7	12.4	14.2
1946–48	66.1	70.6	67.3	71.5	45.0	48.7	26.8	30.5	12.3	14.4
1953–55	67.1	72.8	67.9	73.2	45.5	50.2	27.2	31.4	12.3	15.0
1960–62	67.9	74.2	68.5	74.5	45.8	51.3	27.4	32.4	12.5	15.7
1965–67	67.6	74.2	68.1	74.4	45.9	51.2	27.0	32.3	12.2	15.7
1970–72	67.9	74.6	68.3	74.7	45.8	51.5	27.1	32.6	12.2	15.9
1975–77	69.6	75.6	69.6	76.5	46.9	53.1	28.3	34.0	13.1	17.1
1980–82	71.2	78.3	71.1	78.0	48.2	54.5	29.5	35.3	13.8	18.0
1981	71.4	78.4	71.2	78.1	48.3	54.7	29.6	35.4	13.9	18.1
1982	71.2	78.2	71.1	77.9	48.2	54.5	29.5	35.2	13.9	17.9
1983	72.1	78.7	71.9	78.4	48.9	54.9	30.1	35.6	14.2	18.3
1984 (*b*)	72.6	79.1	72.4	78.7	49.3	55.2	30.5	35.9	14.5	18.5
1985 (*b*)	72.3	78.8	72.1	78.5	49.2	55.0	30.4	35.7	14.3	18.2

(*a*) Excludes full-blood Aboriginals until 1966. (*b*) Adjusted for late registrations in New South Wales.

Changes in levels of mortality and age-specific death rates reflect trends in the incidence of specific causes of death. The three most prevalent causes of death for both sexes at the present time are ischaemic heart disease, cancer and cerebrovascular disease or stroke. In recent years there have been decreases in the incidence of most of the major causes of death with the exception of cancer, with age-standardised death rates falling by half or more for some classes of disease between 1966 and 1986.

STANDARDISED DEATH RATES (*a*), CAUSES OF DEATH BY SEX, AUSTRALIA

Cause of death	*1966*	*1971*	*1976*	*1981*	*1985*
		MALES			
Neoplasms	184	198	205	215	219
Endocrine, Nutritional and Metabolic Diseases	18	20	17	16	16
Cardiovascular Diseases	498	458	419	349	314
Cerebrovascular Diseases	141	143	123	98	80
Other Circulatory Diseases	70	62	53	40	33
Respiratory Diseases	127	106	109	83	87
Diseases of the Digestive System	34	29	32	32	29
Diseases of Infancy	27	25	20	14	14
Accidents	79	80	70	58	50
Violence, Suicide	21	21	19	20	20
Other	68	58	53	49	56
Total	**1,269**	**1,200**	**1,121**	**974**	**919**
		FEMALES			
Neoplasms	123	125	125	122	130
Endocrine, Nutritional and Metabolic Diseases	19	19	16	13	13
Cardiovascular Diseases	269	246	212	175	167
Cerebrovascular Diseases	137	136	113	86	74
Other Circulatory Diseases	52	46	37	27	22
Respiratory Diseases	48	37	40	28	33
Diseases of the Digestive System	20	17	18	17	19
Diseases of Infancy	21	21	17	11	11
Accidents	34	32	28	22	20
Violence, Suicide	12	11	7	6	6
Other	49	45	37	35	40
Total	**785**	**734**	**650**	**544**	**537**

(*a*) Per 100,000 persons, standardised to age distribution for persons, 1981.

Cause of death is age-related, with different causes assuming greater or lesser significance in persons of different age groups. The most common causes of death during the first year of life are the culmination of conditions originating in the perinatal period. These include prematurity, birth injury and respiratory conditions present from birth. Thereafter, motor vehicle accidents are the most common cause of death for males aged under 45 and for females aged under 25. In the 15–24 age group, death rates from both motor vehicle accidents and suicide are far higher for males than for females, with more than twice as many deaths among males than females in this age group in 1985.

For females aged 25 years and over, malignant neoplasms, particularly cancer of the breast, become the major cause of death and remain so until the age of 65 when both heart disease and stroke surpass cancer as the main cause. For males aged 45 years and over, heart disease and circulatory disease become the main cause of death and the rate continues to increase thereafter.

Marriages

Numbers of marriages recorded in Australia have risen from 10,000 in 1861 to annual averages of nearly 25,000 at the end of the 19th century, almost 65,000 between 1936 and 1940, and reaching 115,000 by 1985. Exceptions to the general increase in numbers occurred during the economic depressions of the 1890s and 1930s and, more recently, during the 1970s. Both World Wars this century created major fluctuations to numbers marrying, distorting for a time the overall trend.

MARRIAGES REGISTERED: RELATIVE PREVIOUS MARITAL STATUS, NUMBER AND PER CENT, AND CRUDE MARRIAGE RATE, AUSTRALIA

	Both partners never married		*One or both partners previously married*			
Years	*Number*	*Per cent*	*Number*	*Per cent*	*All marriages*	*Crude marriage rate (a)*
Annual averages—						
1861–1870	Not available				10,940	8.0
1871–1880					13,799	7.2
1881–1890					21,284	7.9
1891–1900					23,327	6.7
1901–1910					30,414	7.5
1911–1920	36,727	89.4	4,368	10.6	41,095	8.1
1921–1930	40,931	88.0	5,584	12.0	46,515	7.8
1931–1940	49,902	89.1	6,109	10.9	56,011	8.2
1941–1950	62,385	84.4	11,551	15.6	73,936	9.9
1951–1960	61,129	83.2	12,349	16.8	73,478	7.9
1961–1970	81,720	86.3	12,997	13.7	94,717	8.2
1971–1975	93,734	83.8	18,068	16.2	111,802	8.3
1976–1980	73,401	69.1	32,896	30.9	106,297	7.4
1981–1985	77,003	67.5	37,035	32.5	114,038	7.4
1986	76,674	66.7	38,239	33.3	114,913	7.2

(*a*) There is a break in the continuity due to revision of methods used to calculate population estimates between 1961 and 1962, and between 1971 and 1972.

Throughout this century there have been two periods of rising marriage rates, firstly from the mid-1930s until just after World War II, and secondly from the early 1960s to the early 1970s. During the first of these periods, the crude marriage rate rose from annual averages of 7.2 per 1,000 population during 1931–35 to 9.7 over the next 15 years, reaching the highest rate on record in 1942, at 12.0 per 1,000 population, when 86,000 marriages were registered. The second period of rising marriage rates occurred during the 1960s and early 1970s, following stabilisation of marriage numbers during the 1950s, when these averaged 73,500 annually. The number of marriages rose to a peak of 117,600 in 1971 before falling back to 104,000 by 1975.

In contrast with the beginning of the 20th century, three changes in marriage patterns had taken place by the early 1970s. Firstly, a far higher proportion of people were marrying; secondly, the age range across which marriage took place had narrowed with a definite preference for marriage at a younger age; thirdly, differences between the sexes relating to age at marriage had been reduced, with marriage patterns for males conforming more closely to those of females. Changes to proportions marrying are covered in the previous section on marital status of the population.

MEDIAN AGES OF BRIDEGROOMS AND BRIDES, PREVIOUS MARITAL STATUS AUSTRALIA (*a*)

	Median age of bridegrooms				*Median age of brides*			
Period	*Bachelors*	*Widowers*	*Divorced*	*Total*	*Spinsters*	*Widows*	*Divorced*	*Total*
1921–25	26.9	44.0	38.3	27.4	23.9	38.5	33.5	24.3
1926–30	26.4	45.5	38.6	26.8	23.4	41.1	34.1	23.8
1931–35	26.5	46.7	39.3	26.9	23.4	42.9	34.2	23.7
1936–40	26.7	48.7	38.6	27.1	23.7	44.1	34.0	24.0
1941–45	25.7	50.8	38.5	26.3	22.9	43.6	34.0	23.3
1946–50	25.2	52.2	37.1	25.9	22.4	41.6	33.1	23.0
1951–55	25.0	54.3	38.9	25.7	22.1	45.3	34.6	22.7
1956–60	24.7	56.5	39.3	25.4	21.6	47.6	35.4	22.0
1961–65	24.2	56.6	40.4	24.7	21.3	49.3	36.6	21.7
1966–70	23.5	56.7	39.8	23.9	21.2	50.1	36.1	21.5
1971–75	23.3	57.8	37.3	23.9	21.0	51.1	33.0	21.4
1976–80	23.9	58.4	36.1	25.4	21.6	51.6	32.5	22.7
1981–85	24.9	59.8	36.6	26.4	22.7	52.2	33.5	23.9

(*a*) Excludes full-blood Aboriginals before 1966.

The shift to younger marriage was already evident from declines in median age at first marriage prior to the 1930s, but postponements of marriage during the economic depression subsequently increased the median age when these delayed marriages eventuated in the second half of the 1930s. Between the 1936–40 and the 1971–75 periods, however, median age at first marriage declined from 26.7 years to 23.3 years for males and from 23.7 years to 21.0 years for females. Until the early 1960s, the difference between median age at marriage of males and females remained around 3.0 years. However during the 1960s this gap became smaller, falling to 2.3 years by 1971 as the age at first marriage for males became younger. Between 1956–60 and 1966–70, while the ratio of first marriages for females aged 20–24 remained virtually static, the ratio for males of the same age increased from 484.8 to 553.8 per thousand.

FIRST MARRIAGE RATIOS (*a*), AUSTRALIA (*b*)

	Cumulative ratios of age-groups (c)—						*Index of total first marriages (d)*
Years	*To 19*	*20–24*	*25–29*	*30–34*	*35–39*	*40 and over*	
			BRIDEGROOMS				
Average annual ratios—							
1951–55	41.0	466.7	275.1	92.9	42.3	58.5	976.5
1956–60	48.8	484.8	274.5	92.6	34.7	45.6	981.0
1961–65	59.8	506.2	279.0	88.9	33.6	38.0	1,005.5
1966–70	72.1	553.8	265.1	75.9	29.9	35.4	1,032.2
1971–75	72.0	506.4	201.4	58.7	22.9	30.9	892.2
1976–80	37.6	368.2	184.4	55.2	20.8	28.5	694.7
1981–85(*e*)	19.9	310.8	221.6	70.8	23.3	25.7	672.2
Annual ratios—							
1981	29.0	346.7	209.4	62.7	22.7	27.5	695.7
1982	24.1	337.0	220.3	68.2	22.9	27.3	699.8
1983	19.1	312.6	223.4	71.0	22.9	24.6	673.7
1984(*e*)	15.6	277.3	218.4	70.9	22.7	23.9	628.7
1985(*e*)	14.1	280.3	236.9	81.2	25.2	25.0	662.9
1986(*e*)	12.4	262.1	239.6	84.5	26.5	23.8	648.6

FIRST MARRIAGE RATIOS (*a*), AUSTRALIA (*b*)—*continued*

	Cumulative ratios of age-groups (c)—						
Years	*To 19*	*20–24*	*25–29*	*30–34*	*35–39*	*40 and over*	*Index of total first marriages (d)*
			BRIDES				
Average annual ratios—							
1951–55	272.2	559.5	148.0	48.0	23.5	37.0	1,091.8
1956–60	280.4	545.2	127.7	40.2	18.0	28.4	1,044.3
1961–65	271.6	530.5	115.7	34.3	14.9	23.6	993.5
1966–70	290.5	541.2	112.0	30.4	12.2	19.6	1,006.9
1971–75	299.1	452.2	92.7	27.5	10.9	15.8	898.2
1976–80	182.9	362.7	95.5	28.0	11.4	14.7	695.0
1981–85*(e)*	113.2	376.9	135.3	36.1	11.8	11.9	685.1
Annual ratios—							
1981	142.9	384.6	116.1	30.7	11.2	12.7	698.2
1982	130.7	389.2	129.8	34.3	11.4	12.2	707.9
1983	110.4	382.8	136.9	36.4	11.5	11.4	689.3
1984*(e)*	93.2	355.5	137.4	36.6	11.3	11.1	645.0
1985*(e)*	88.7	372.5	156.1	39.5	13.4	12.0	685.0
1986*(e)*	77.1	359.1	165.7	46.7	14.0	11.2	674.8

(a) Per 1,000 mid-year population of males and females of each age. There is a break in the continuity due to the revision of methods used to calculate population estimates between 1961 and 1962, and between 1971 and 1972. *(b)* Excludes full-blood Aboriginals prior to 1966. *(c)* Ratios for each age-group are calculated by summing the ratios for single years. *(d)* The sum of all single year ratios. *(e)* These ratios have been affected by late registrations of births, deaths and marriages in New South Wales.

Since the early 1970s, new marriage patterns have emerged. Firstly, while total numbers of persons marrying recovered during 1981–85 to an annual average of 114,000 (higher than the previous peak of 111,800 during 1971–75), the numbers of marriages in which neither party has been previously married has fallen during that time, from annual averages of 93,700 during 1971–75 to 77,000 between 1981–85. Secondly the median age at first marriage has risen during the last decade from 23.3 years to 24.9 years for males, and from 21.2 years to 22.7 years for females. However, the age differential between the sexes at first marriage has remained almost constant at 2.3 years.

The decline in first marriage ratios and increase in the median age at first marriage over the last decade may reflect to some extent the tendency of some couples to live together before getting married. Although there is no reliable time series data on this group, the Family Formation Survey conducted in 1986 estimated that 68,600 females aged 20–29 years were living in a de facto marriage relationship. This represented 5.2 per cent of all females in this age group.

DIVORCES

DIVORCES (*a*) AUSTRALIA

Years	*Divorces*	*Years*	*Divorces*
Annual averages—		Annual averages—	
1891–1900	357	1976–80	45,220
1901–10	399	1981–85	42,396
1911–20	742	Annual totals—	
1921–30	1,692	1981	41,412
1931–40	2,508	1982	44,088
1941–50	4,584	1983	43,525
1951–60	6,906	1984	43,124
1961–70	9,120	1985	39,830
1971–75	17,348	1986	39,417

(*a*) Includes small numbers of nullities between 1891–1950.

For most of this century there has been a slow but steady rise in the numbers of divorces granted each year, increasing from annual averages of 400 between 1901–10 to 9,120 between 1961–70. However, the most important factor involved in rising divorce rates in recent times has been the introduction of the *Family Law Act 1975* which came into operation on 5 January 1976. This legislation provides for a single ground for divorce, namely irretrievable breakdown of marriage, which is established by a minimum one-year separation of the husband and wife.

Removal of the need to prove fault, together with reduction of the separation period from five years to one year, has provided easier and faster access to divorce for either party. After the introduction of the Family Law Act, the number of divorces per year rose from annual averages of 17,350 to 45,220 between 1971–75 and 1976–80, while the median duration of marriage of divorcing couples decreased from 12.5 years in 1971 to 10.2 years in 1981, before increasing slightly to 10.6 years in 1986.

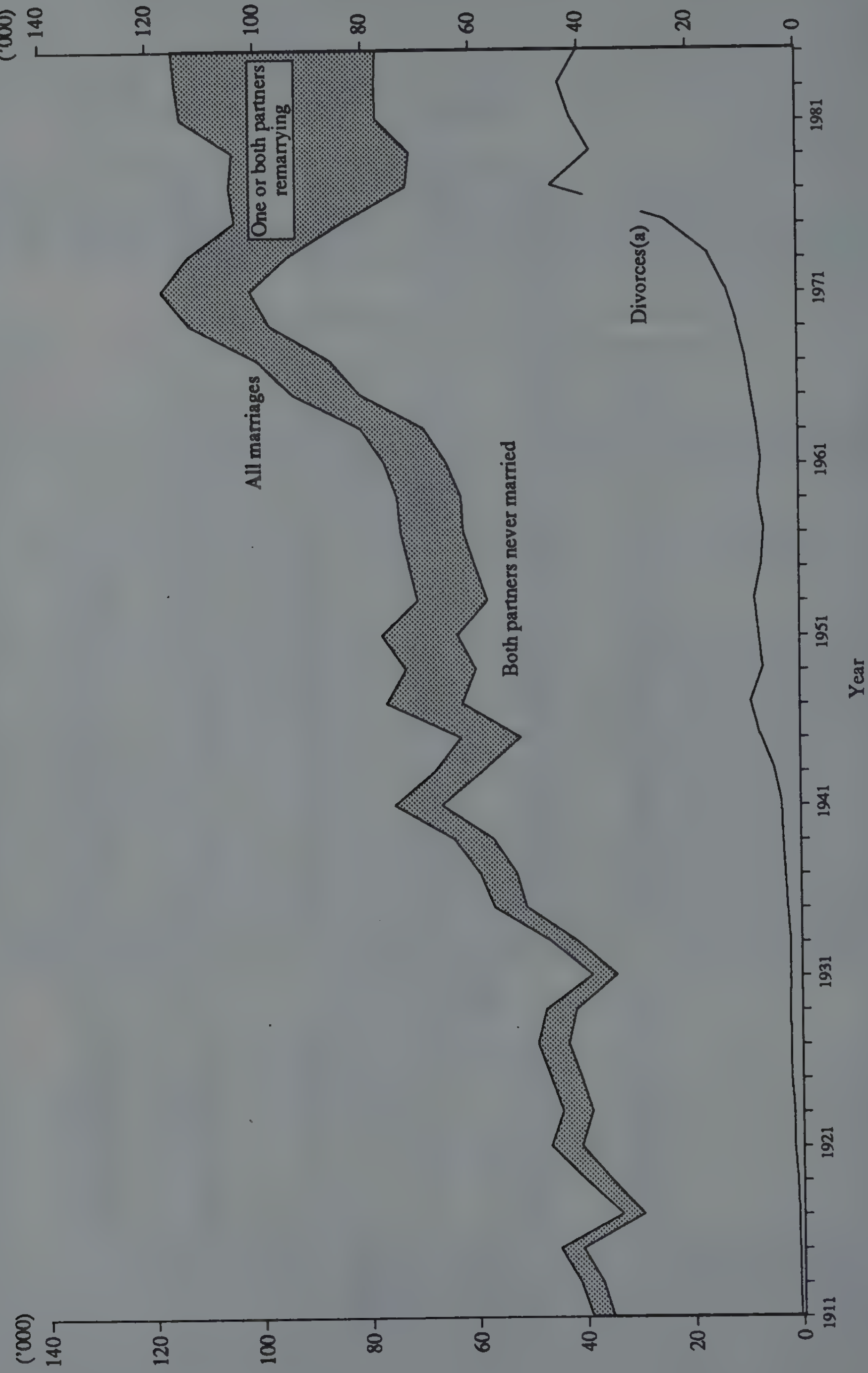
DIVORCES: DURATION OF MARRIAGE, AUSTRALIA

Year	*Duration of marriage (years)*					*Total*	*Median duration of marriage*
	Under 5	*5–9*	*10–14*	*15–19*	*20 and over*		
ACCORDING TO INTERVAL BETWEEN DATE OF MARRIAGE AND DATE DECREE MADE ABSOLUTE							
			—per cent—				Years
1967	7.1	25.4	20.2	17.4	29.9	100.0	n.a.
1968	8.0	28.2	19.8	15.6	28.3	100.0	n.a.
1969	8.9	28.0	20.7	14.8	27.6	100.0	13.0
1970	10.0	29.4	19.4	14.0	27.1	100.0	12.5
1971	9.3	30.0	20.0	14.3	26.4	100.0	12.5
1972	10.0	30.8	19.2	14.2	25.8	100.0	12.1
1973	10.0	32.2	19.3	13.5	25.1	100.0	11.8
1974	9.5	31.7	20.2	13.5	25.2	100.0	11.8
1975	9.9	32.4	20.1	13.8	23.8	100.0	11.6
1976 *(a)*	15.5	30.2	18.1	12.5	23.7	100.0	11.0
1977	17.3	28.7	18.6	12.5	23.0	100.0	10.9
1978	19.3	28.6	18.5	12.2	21.4	100.0	10.5
1979	20.1	28.4	18.3	12.3	20.9	100.0	10.3
1980	20.7	28.4	19.3	11.8	19.8	100.0	10.2
1981	20.8	28.5	19.6	11.9	19.2	100.0	10.2
1982	20.3	28.0	20.0	13.0	18.8	100.0	10.4
1983	20.8	26.8	20.3	13.2	18.9	100.0	10.5
1984	21.4	26.4	19.6	13.7	19.0	100.0	10.5
1985	21.7	26.2	18.7	14.0	19.3	100.0	10.5
1986	21.7	26.2	17.8	14.3	19.9	100.0	10.6
ACCORDING TO INTERVAL BETWEEN DATE OF MARRIAGE AND DATE OF FINAL SEPARATION							
			—per cent—				Years
1976	39.6	22.5	13.6	10.6	13.8	100.0	6.9
1977	36.9	24.2	14.9	10.7	13.4	100.0	7.4
1978	36.4	24.6	15.1	10.6	13.3	100.0	7.4
1979	36.2	24.5	15.0	11.0	13.3	100.0	7.5
1980	36.4	24.9	15.4	10.5	12.8	100.0	7.5
1981	36.4	24.9	15.9	10.2	12.6	100.0	7.5
1982	36.2	24.3	16.3	10.9	12.3	100.0	7.6
1983	36.3	23.3	16.9	11.0	12.4	100.0	7.7
1984	36.9	22.7	16.8	11.1	12.6	100.0	7.7
1985	37.1	22.1	16.5	11.5	12.6	100.0	7.6
1986	37.6	21.5	16.0	11.7	13.2	100.0	7.6

(a) Discontinuity in the series due to the *Family Law Act 1975* which came into operation on 5 January 1976.

There has been an increasing tendency for divorce to occur in the early years of marriage and at an earlier age. The proportion of divorces taking place within the first five years of marriage more than doubled from 9.9 per cent in 1975 to 20.7 per cent in 1980, and continues to rise. Similarly, while increases in the divorce rates have occurred in all age categories since the introduction of the Family Law Act, the largest increases have occurred among couples in the younger age-groups. In 1981 the highest divorce rates for both males and females occurred in the 25–29 year age group.

MARRIAGES AND DIVORCES, AUSTRALIA



(a) Break in series between 1975 and 1976 due to introduction of the Family Law Act.

AGE-SPECIFIC DIVORCE RATES PER 1,000 MARRIED POPULATION, AUSTRALIA

Census Year	Age group (years) Under 25	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60 and over	Total
					HUSBAND					
1947	2.7	7.6	9.4	7.9	6.3	4.4	2.9	2.0	0.7	5.0
1954	1.9	4.4	4.8	4.3	3.6	3.0	2.3	1.8	0.6	3.1
1961	1.3	3.6	4.4	3.9	3.3	2.8	2.3	1.6	0.7	2.8
1966	2.5	6.7	7.6	6.9	6.6	5.3	4.6	3.4	1.2	3.7
1971	2.3	6.7	6.7	5.5	5.1	4.5	3.5	2.7	1.1	4.2
1976	18.0	31.6	28.8	23.9	21.2	18.6	15.0	11.1	5.1	18.9
1981	13.9	22.4	18.9	16.2	13.5	10.9	8.3	2.2	2.4	11.9
					WIFE					
1947	4.6	9.0	8.6	6.9	5.0	3.3	2.1	1.2	0.5	5.0
1954	3.0	5.0	4.4	4.1	3.4	2.4	1.6	1.1	0.4	3.1
1961	2.3	4.5	4.2	3.4	3.1	2.5	1.7	1.2	0.6	2.8
1966	3.9	7.7	7.3	6.1	5.7	4.7	3.4	2.6	0.9	3.8
1971	3.6	7.6	6.1	5.0	4.6	4.0	3.0	2.0	0.8	4.2
1976	22.7	31.5	26.9	22.0	19.2	16.0	12.6	8.8	4.1	18.8
1981	18.0	22.0	16.9	14.7	11.8	8.9	6.2	4.1	1.8	11.9

There has been a recent increase in the proportion of divorces which do not involve children, from 32.4 per cent during 1971–75 to 39.4 per cent in 1985. Where divorce involves children, the average number of children per divorce has fallen from 2.1 to 1.9 in the period between 1971–75 and 1981–85, although the total number of children affected by divorce has risen as the overall numbers of divorces has increased.

DIVORCES: PERCENTAGE DISTRIBUTION OF THE NUMBER OF CHILDREN OF THE MARRIAGE, AUSTRALIA

Year	Number of children 0	1	2	3	4	5	6 or more	Total divorces	Total children	Average number of children (a)
				— per cent —				No.	No.	No.
1947–50	38.5	30.4	17.6	7.5	3.2	1.4	1.4	29,819	35,123	1.9
1951–55	34.0	30.2	20.5	8.6	3.7	1.6	1.5	35,454	45,984	2.0
1956–60	34.5	26.9	21.8	9.8	4.1	1.5	1.5	33,601	44,729	2.0
1961–65	37.4	25.8	21.3	9.9	3.7	1.2	0.7	37,841	46,737	2.0
1966–70	34.0	24.9	22.7	11.3	4.7	1.5	0.9	53,406	72,942	2.1
1971–75	32.4	23.4	24.2	12.4	5.0	1.6	0.9	86,743	124,198	2.1
1976–80	37.6	22.5	24.3	10.5	3.6	1.0	0.5	226,100	276,088	2.0
1981	38.9	21.5	25.6	10.0	3.0	0.7	0.3	41,412	49,616	2.0
1982	38.4	21.6	26.2	10.3	2.7	0.6	0.2	44,088	53,010	2.0
1983	38.4	21.8	26.2	10.2	2.7	0.5	0.2	43,525	52,059	1.9
1984	39.1	21.6	26.2	9.8	2.6	0.5	0.2	43,124	50,713	1.9
1985	39.4	21.1	26.2	10.0	2.6	0.5	0.2	39,830	46,800	1.9
1986	40.3	21.2	25.8	9.5	2.5	0.5	0.2	39,417	45,231	1.9

(a) Divorces involving one or more children.

There is some evidence to suggest that the incidence of divorce is now decreasing. The number of divorces granted has fallen continually since 1982.

Remarriages

There has been a significant increase throughout this century in both the numbers and proportions of marriages in which one or both parties have been previously married. The average annual number of such marriages has increased from 4,368 in 1911–20 to 38,239 in 1986, increasing as a proportion of total marriage from 10.6 per cent to 33.3 per cent during this time.

MARRIAGES IN WHICH ONE OR BOTH PARTNERS HAVE BEEN PREVIOUSLY MARRIED: RELATIVE PREVIOUS MARITAL STATUS, NUMBER AND PER CENT, AUSTRALIA

	Both partners divorced		*One partner divorced*		*Other (a)*		*Total*
Years	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*
Annual averages—							
1911–20	21	0.5	600	13.7	3,747	85.8	4,368
1921–30	80	1.4	1,404	25.1	4,100	73.4	5,584
1931–40	183	3.0	2,306	37.7	3,619	59.2	6,109
1941–50	827	7.2	6,072	52.6	4,651	40.3	11,550
1951–60	1,424	11.5	6,865	55.6	4,059	32.9	12,349
1961–70	1,900	14.6	7,491	57.6	3,606	27.7	12,997
1971–75	3,369	18.6	11,094	61.4	3,606	20.0	18,069
1976–80	9,961	30.3	19,924	60.6	3,011	9.2	32,896
1981–85(*b*)	12,125	32.7	22,399	60.5	2,511	6.8	37,035
1986(*b*)	12,823	33.5	22,918	59.9	2,498	6.5	38,239

(*a*) One or both partners widowed. (*b*) The statistics for 1984, 1985 and 1986 were affected by late registrations in New South Wales.

This change has been brought about by the almost continuous growth in the numbers of marriages in which one or both parties were divorced at the time of remarriage. Such marriages have increased from annual averages of 621 between 1911–20 to 35,741 in 1986 and, as a proportion of marriages involving remarriage, from 14.2 per cent to 93.5 per cent over that time.

While the move to predominance of divorced persons among those remarrying has been ongoing throughout most of this century, increases were particularly noticeable at the time of World War II and following the operation of the Family Law Act in 1976. Sharp rises in the number of divorces took place in both these periods, followed by increases to remarriage rates for both sexes.

REMARRIAGES, DIVORCED AND WIDOWED PERSONS AGED 15 AND OVER, AUSTRALIA

Census Year	*Total Marriages*	*Remarriages of persons previously—*			*Remarriage rates*		
		Widowed	*Divorced*	*Total*	*Widowed (a)*	*Divorced (a)*	*Total (b)*
			MALES				
1911	39,482	2,304	183	2,487	36.1	77.3	37.6
1921	46,869	2,988	562	3,550	40.6	132.8	45.6
1933	46,595	2,434	939	3,373	24.7	91.2	31.0
1947	76,457	3,614	5,178	8,792	32.2	206.7	64.0
1954	71,229	3,344	4,529	7,873	29.5	139.4	54.0
1961	76,686	3,032	4,536	7,568	26.1	117.4	48.9
1966	96,046	3,209	5,598	8,807	26.3	130.5	53.4
1971	117,637	3,604	7,783	11,387	27.8	126.0	59.5
1976	109,973	3,777	19,404	23,181	29.6	201.2	103.5
1981	113,905	3,152	23,293	26,445	23.1	131.1	84.2
			FEMALES				
1911	39,482	1,846	285	2,131	14.4	133.2	16.4
1921	46,869	2,770	583	3,353	16.8	135.5	19.8
1933	46,595	1,620	928	2,548	7.0	85.2	10.5
1947	76,457	3,654	5,102	8,756	11.7	185.4	25.9
1954	71,229	3,456	4,968	8,424	9.8	135.3	21.7
1961	76,686	3,301	4,776	8,077	8.1	110.2	17.9
1966	96,046	3,309	5,627	8,936	7.1	110.0	17.4
1971	117,637	3,833	7,467	11,300	7.4	104.6	19.2
1976	109,973	4,378	18,161	22,539	7.9	146.3	33.3
1981	113,905	3,727	21,870	25,597	6.1	96.9	30.5

(*a*) Per thousand widowed or divorced persons. (*b*) Per thousand married persons.

Compared with the rapid rise in numbers of divorced persons remarrying throughout this century, the number of widowed persons remarrying has increased very slowly.

MIGRATION

Statistics of overseas arrivals and departures are compiled from incoming and outgoing passenger cards which are collected from all travellers under the *Migration Act 1958*. Earlier statistics were obtained from Shipping and Plane manifests required under various Acts.

Since 1924, overseas travellers have been classified into two principal categories which distinguish short-term movements (of less than 12 months duration) from long-term movements (of 12 months duration or longer, including permanent movements). Revised questions for travellers were introduced in 1959 and again in 1974. The 1959 revision enabled the distinction of permanent from other long-term movements and also the identification of former settlers departing permanently. The 1974 revisions improved the layout of the passenger card without changing the classification.

Migration to Australia

Migration to Australia is presently regulated by the *Migration Act 1958* which came into force on 1 June 1959. Any person entering Australia after the introduction of the Act without having been granted an entry permit or who is not within an exempted class is a prohibited non-citizen. Exempted persons include New Zealand citizens, diplomatic and consular representatives of other countries, and seamen and air crew who enter Australian ports while on leave.

Until recently, net gains provided a satisfactory measure of the population gain from international migration (i.e., the excess of total arrivals over total departures). In recent years, however, because of the large increase in short term movements (over 6 million in 1986), distortions arising from seasonality of these movements have become very large. For the purpose of estimating the population of Australia and the States and Territories, therefore, the migration component of population growth has been measured since 1 July 1971 by reference to permanent and long-term movements only.

Net migration is estimated to have directly contributed 34.0 per cent of the total population increase between European settlement in 1788 and 1980. The first boost to free settlement came with the introduction of assisted migration schemes during the 1830s, with nearly half of the 2.5 million settlers arriving up to 1939 receiving assisted passage. Over 95.0 per cent of those assisted were British.

In the period since World War II, British migrants have remained the most numerous group of settlers. However, the group has declined in absolute numbers since the 1970s and as a proportion of total settler arrivals since the 1960s, from 46 to 48 per cent in the 1950s and 1960s to 25.2 per cent in 1981–85.

BIRTHPLACE OF SETTLER ARRIVALS (*a*) AUSTRALIA, SELECTED YEARS

Birthplace	*1961–65*	*1971–75*	*1981–85*	*Total*	*1961–65*	*1971–75*	*1981–85*	*Total*
	—'000s—				—per cent—			
United Kingdom and Ireland	267.3	226.0	115.9	1,075.5	46.4	41.2	25.2	39.0
New Zealand	7.7	17.5	48.6	143.0	1.3	3.2	10.6	5.2
Italy	67.3	18.4	4.3	158.5	11.7	3.4	0.9	5.7
Yugoslavia	25.6	40.3	7.3	154.8	4.4	7.3	1.6	5.6
Greece	65.6	21.1	3.9	149.3	11.4	3.8	0.8	5.4
Vietnam	(*c*)	(*c*)	47.2	(*b*) 84.9	(*c*)	(*c*)	10.3	(*b*)3.1
Germany	17.8	10.3	11.6	63.8	3.1	1.9	2.5	2.3
United States of America	6.8	19.5	8.4	56.2	1.2	3.6	1.8	2.0
Lebanon	3.5	12.8	7.0	53.9	0.6	2.3	1.5	2.0
Netherlands	13.2	5.6	6.4	41.9	2.3	1.0	1.4	1.5
India	3.2	12.1	8.3	41.6	0.6	2.2	1.8	1.5
South Africa	3.9	6.3	12.2	37.2	0.7	1.1	2.7	1.3
Poland	6.7	2.2	14.8	30.6	1.2	0.4	3.2	1.1
Turkey	(*c*)	11.6	3.7	(*b*) 29.7	(*c*)	2.1	0.8	(*b*) 1.1
Philippines	(*c*)	3.1	15.4	(*b*) 27.0	(*c*)	0.6	3.4	(*b*) 1.0
Malaysia	(*c*)	4.8	10.4	(*b*) 24.0	(*c*)	0.9	2.3	(*b*) 0.9
Hong Kong	(*c*)	(*c*)	9.9	(*b*) 15.3	(*c*)	(*c*)	2.2	(*b*) 0.6
Kampuchea	(*c*)	(*c*)	10.3	(*b*) 13.8	(*c*)	(*c*)	2.2	(*b*) 0.5
Other	87.4	136.8	113.8	556.0	15.2	24.9	24.8	20.2
Total	**576.0**	**548.4**	**459.4**	**2,757.0**	**100.0**	**100.0**	**100.0**	**100.0**

(*a*) Permanent arrivals only. (*b*) The statistics for some listed countries do not relate to the whole period 1961 to 1985 i.e. the statistics for Vietnam relate to the period 1974–85; Turkey, 1966–85; Philippines, 1971–85; Malaysia, 1971–85; Hong Kong, 1976–85; Kampuchea, 1974–85. (*c*) The statistics for this country are not separately available but are included in the category 'Other'.

In contrast, source countries of migrants have diversified and the number of non-British migrants has increased. Two factors have contributed to this shift. Firstly, entry conditions to Australia were eased after World War II initially for European refugees from Displaced Persons Camps then, subsequently, restrictions relating to other racial groups were removed. Secondly, assisted passage was extended to a wider range of migrants. Originally this included Central and Eastern European refugees after World War II, then German and Dutch settlers in the 1950s and 1960s, Southern European and Middle-East groups from the 1960s and, more recently, Indo-Chinese refugees. Between 1946 and 1980 some 53.7 per cent of settlers were assisted, reaching an average of 66.8 per cent during the boom migration years of 1966–70. In recent times, however, assisted passages have been phased out with the exception of refugees.

SETTLER ARRIVALS, ASSISTED AND UNASSISTED, AUSTRALIA

Years	*Assisted (a)*		*Unassisted*		*Total*
	No.	%	No.	%	No.
Annual averages—					
1926–30	19,881	60.4	13,028	39.6	32,909
1931–35	156	1.4	10,733	98.6	10,889
1936–40	766	4.3	16,976	95.7	17,742
1941–45	—	—	6,525	100.0	6,525
1946–50	54,639	59.7	36,959	40.3	91,598
1951–55	55,048	48.3	58,970	51.7	114,018
1956–60	61,103	49.6	62,050	50.4	123,153
1961–65	67,426	58.5	47,772	41.5	115,198
1966–70	107,496	66.8	53,320	33.2	160,810
1971–75	58,180	53.0	51,510	47.0	109,690
1976–80	19,660	26.6	54,160	73.4	73,820
Annual totals—					
1981	29,960	25.2	88,780	74.8	118,730
1982	20,200	18.8	86,970	81.2	107,170
1983	16,370	15.5	62,020	84.5	78,390

(*a*) From 1946–50 to 1983 figures for assisted settlers include assisted refugee arrivals. After 1981, applications for assisted passage were limited to refugees and special applicants, however figures for 1982 and 1983 include persons whose applications for assistance were processed under the previous scheme. The 1983 total for assisted settlers was provided by the Department of Immigration and Ethnic Affairs.

Statistics for birthplace of migrants are only available since 1959. However, some indication of migration by the largest non-British groups since World War II can be obtained by using data on nationality and birthplace of migrants. Between 1948 and 1985 approximately 8.7 per cent of all migrants were Italian, 5.1 per cent were Greek, 4.4 per cent were Yugoslavs, 3.8 per cent were Dutch, 3.4 per cent were Germans and 2.4 per cent were Poles.

NATIONALITY OF PERMANENT ARRIVALS (*a*), AUSTRALIA

Nationality	*1948–50*		*1951–55*		*1956–60*		*Total*	
	'000s	%	'000s	%	'000s	%	'000s	%
British (*b*) and Irish	163.2	42.9	274.5	48.2	294.6	47.8	732.3	46.7
Italian	25.2	6.6	101.4	17.8	92.7	15.1	219.3	14.0
Dutch	12.8	3.4	62.7	11.0	45.0	7.3	120.5	7.7
German	3.2	0.8	42.0	7.4	38.6	6.3	83.8	5.3
Polish	63.6	16.7	5.3	0.9	5.3	0.9	74.3	4.7
Greek	4.0	1.1	28.8	5.1	39.3	6.4	72.2	4.6
Yugoslav	19.5	5.1	6.8	1.2	7.2	1.2	33.6	2.1
Estonian, Latvian and Lithuanian	30.9	8.1	1.7	0.3	0.2	0.1	32.6	2.1
Hungarian	11.2	3.0	2.3	0.4	13.2	2.1	26.7	1.7
Russian	17.1	4.5	2.7	0.5	3.7	0.6	23.5	1.5
Austrian	1.0	0.3	7.6	1.3	10.5	1.7	19.2	1.2
Other and Stateless	28.6	7.5	34.3	6.0	65.4	10.6	128.4	8.2
Total	**380.6**	**100.0**	**570.1**	**100.0**	**615.8**	**100.0**	**1,566.4**	**100.0**

(*a*) 'Permanent arrivals' includes permanent and long-term movement exceeding 12 months. (*b*) Includes New Zealand and all British Commonwealth countries during the respective periods.

The contribution of various groups has changed over time, with northern Europe declining as a major source of migrants (apart from the British) by the 1960s, while southern European countries provided the greater part of non-English speaking migrants throughout the 1960s. From the mid-1960s to the mid-1970s, migrants from the Middle-East and India increased in numbers. More recently, since 1975, there has been an upturn in migrants from South-East Asia and Hong Kong, and particularly refugees from Indo-China. Between 1981 and 1985, Vietnamese-born arrivals accounted for 10.3 per cent of Australia's settler intake.

Since 1978–79, family immigration has increased in importance, with migration of family members now amounting to over 50 per cent of settler arrivals. Another recent trend has been the increase in non-visaed migrants in Australia. These are primarily New Zealand citizens migrating under the Trans-Tasman Travel Arrangement under which Australian and New Zealander citizens may enter each country without the need to obtain visas or entry permits. Other non-visaed migrants include children born to Australian citizens overseas, persons who have acquired Australian citizenship overseas and residents of Norfolk Island (an Australian Territory). New Zealand migrants increased numerically from 17,500 to 48,600 between 1971–75 and 1981–85 and as a proportion of total migrants from 3.2 per cent to 10.6 per cent between those periods.

The age composition of settlers has been younger than that of Australia's population for some time. The median age of settlers arriving between 1971 and 1984 was 24.0 years compared with 29.7 years for the population as a whole at the time of the 1981 Census and the age structure of settlers reflects the predominance of young families arriving in Australia. Persons aged 65 years and over represented 3.6 per cent of migrants arriving between 1971 and 1985, which contrasts with the share of these people in Australia's population of 9.8 per cent in 1981.

PERMANENT ARRIVALS BY SEX AND AGE, PERCENTAGE DISTRIBUTION, AUSTRALIA

	Age group						*Total*
Years	*0–4*	*5–14*	*15–24*	*25–44*	*45–64*	*65 and over*	*number*
			MALES				
Annual averages—							
1947–50	9.5	10.3	21.7	48.4	8.8	1.4	62,930
1951–55	9.0	14.9	25.9	41.8	7.2	1.2	64,821
1956–60	25.5		27.0	38.7	7.4	1.4	59,532
1961–65	29.0		25.6	36.3	7.6	1.5	59,972
1966–70	12.2	17.8	24.5	37.3	6.7	1.4	86,480
1971–75	13.3	17.9	23.1	36.4	7.0	2.2	55,790
1976–80	13.4	19.4	20.9	34.4	8.1	3.8	36,830
1981–85	12.2	19.1	19.0	38.4	7.8	3.6	46,760
			FEMALES				
Annual averages—							
1947–50	12.1	12.6	18.3	41.6	12.6	2.8	47,013
1951–55	11.1	17.4	18.5	39.6	10.9	2.4	49,197
1956–60	26.7		24.3	36.4	10.0	2.5	52,514
1961–65	29.2		25.8	33.1	9.3	2.7	55,226
1966–70	13.3	19.4	23.9	32.5	8.4	2.5	74,330
1971–75	12.9	17.3	25.4	32.4	8.9	3.2	53,900
1976–80	12.5	17.3	21.9	32.9	10.5	4.9	37,000
1981–85	11.8	17.4	19.3	37.6	9.4	4.5	45,122
			PERSONS				
Annual averages—							
1947–50	10.6	11.3	20.2	45.5	10.4	2.0	109,943
1951–55	9.9	16.0	22.7	40.8	8.8	1.7	114,018
1956–60	26.1		25.8	37.6	8.6	1.9	112,046
1961–65	29.1		25.7	34.8	8.4	2.1	115,198
1966–70	12.7	18.6	24.2	35.1	7.5	1.9	160,810
1971–75	13.1	17.6	24.2	34.4	7.9	2.7	109,690
1976–80	13.0	18.3	21.4	33.6	9.3	4.3	73,830
1981–85	12.0	18.3	19.2	38.0	8.6	4.0	91,882

Despite the youthfulness of the settlers, their median age has been rising. In 1971 it was 23.1 years and in 1984 it was 26.0 years. This rise has been particularly marked since 1981, when the numbers of migrants under the 'family reunion' category began to increase. At the younger ages, declines have taken place since the mid-1970s in the proportion of settlers in the 15–24 year age group while there has been an increase in the proportion of settlers aged 45 and over.

The sex ratio of settlers has declined almost continually between 1948–50 and 1976–80, with the exception of the 1961–65 period. The sex ratio tends to be high in years of large intake, and falls as intake declines. Males have constantly exceeded females in the 25–44 year age group, although the sex ratio has fallen closer to equality since the mid-1970s. Traditionally, the sex ratio of the overseas born has been higher than the Australian born population.

PERMANENT ARRIVALS: SEX RATIOS (*a*) BY AGE, AUSTRALIA

	Age group					
Year	*0–14*	*15–24*	*25–44*	*45–64*	*65+*	*Total*
Annual averages—						
1947–50	107.5	158.5	155.6	93.0	66.2	133.9
1951–55	110.4	184.1	139.0	87.7	62.7	131.8
1956–60	108.4	126.0	120.2	84.0	61.7	113.4
1961–65	107.8	107.9	119.2	88.4	62.3	108.6
1966–70	106.7	119.3	133.7	93.1	66.7	116.3
1971–75	109.6	94.1	116.5	81.2	72.3	103.5
1976–80	109.6	95.1	104.1	76.4	76.8	99.5
1981–85	111.3	101.7	105.7	85.1	83.2	103.6

(*a*) The number of males per 100 females.

Refugees

Since 1945, Australia has accepted more than 420,000 refugees or displaced persons, including 170,000 from Europe who were displaced by World War II and its aftermath.

Australia presently accepts refugees from about 40 countries. The largest element in Australia's current refugee intake is the Indo-Chinese program. In 1984, 8,537 Indo-Chinese refugees were resettled in Australia.

REFUGEE ARRIVALS(*a*), AUSTRALIA

Period	*Assisted*	*Other*	*Total*
Annual averages—			
1961–65	1,799	n.a.	n.a.
1966–70	7,446	n.a.	n.a.
1971–75	2,773	7,776	10,549
1976–80	9,274	3,284	12,558
Annual totals—			
1979	14,639	2,418	17,057
1980	19,875	1,817	21,692
1981	19,055	2,917	21,972
1982	16,467	1,055	17,522
1983	16,194	822	17,016
1984	12,087	3,674	15,761
1985	10,077	3,012	13,089
1986	7,579	2,617	10,196

(*a*) Includes arrivals under the Special Humanitarian Program instituted late in 1981.

Australia is one of 97 countries which have become party to an international convention and protocol on the status of refugees and, in so doing, have taken on certain international legal obligations to assist refugees. The final determination of a refugee's status and the decision to accept those refugees for resettlement in Australia rests with the Australian

Government. Australia is also a member of the Executive Committee of the United Nations High Commission for Refugees (UNHCR). Australia's response to refugee situations is twofold. Through aid programs directed principally through UNHCR, refugees are offered protection and assistance in countries of first refuge. Those refugees for whom other durable solutions are not feasible may be offered resettlement (in Australia) if they have relatives in Australia, other close ties with Australia or the potential for successful settlement in their own right. Such refugees must also be presented to Australia by the UNHCR as being registered or otherwise eligible for resettlement.

Permanent departures

An important influence on the level of population growth is the level of population loss due to outmigration. Between 1971 and 1985, total permanent departures numbered 421,135 persons or an average of 28,076 per year, a level which is 30.6 per cent of the total permanent arrivals in Australia in this period. In other words, for almost every three settlers who arrived during the period, one person has left Australia. The number of departures has declined however since the early 1970s. During the five years between 1981 and 1985, total permanent departures were at a level of 23.8 per cent of total permanent arrivals.

PERMANENT DEPARTURES BY CATEGORY AND PERMANENT ARRIVALS, AUSTRALIA

Year ended 31 December	*Permanent departures*			*Permanent arrivals*	*Ratio of permanent departures to permanent arrivals*
	Former settlers	*Other residents*	*Total*		
1971	29,449	11,673	41,122	155,525	0.264
1972	33,172	12,709	45,881	112,468	0.408
1973	30,325	13,105	43,430	105,003	0.414
1974	21,849	11,902	33,751	121,324	0.278
1975	18,315	10,769	29,084	54,117	0.537
1976	16,815	9,917	26,732	58,317	0.458
1977	14,171	8,591	22,762	75,640	0.301
1978	14,027	10,934	24,961	68,420	0.365
1979	12,670	10,750	23,420	72,420	0.323
1980	11,450	9,393	20,843	94,500	0.221
1981	11,280	8,576	19,856	118,740	0.167
1982	13,352	9,141	22,493	107,170	0.210
1983	16,920	8,950	25,870	78,400	0.330
1984	12,550	9,760	22,310	73,110	0.305
1985	10,020	8,600	18,620	82,000	0.227

Of the two categories of permanent departures, that is 'former settlers' and 'other residents', it has been under the first category that there has been the greatest outflow of persons. Between 1971 and 1984, 'former settlers' represented 63.6 per cent of all permanent departures. The departure of 'other residents' fluctuated between 9,000 and 13,000 persons from year to year throughout the period. The fall in the total number of departures, noted above, is largely attributable to the decline in the number of 'former settlers' departing. There are two major reasons for this decline, the first relates to the decline in the number of settler arrivals in the early 1970s and the second to the shift in origin of immigrants towards refugees for whom there are indications that they are less likely than other settlers to return to their own country.

Internal migration

Information on internal migration has been available from the censuses since 1971 and from the annual Internal Migration Survey since 1970. A good indicator of internal movement over the long term is the duration of stay at a person's usual residence, although this indicator is age-selective and, for the overseas-born, dependent on the year of arrival in Australia. According to the Internal Migration Survey, at 31 May 1986, 74 per cent of persons aged 15 and over had lived at their current usual residence for less than 15 years—that is they had moved at least once during the past 15 years.

PERSONS AGED 15 YEARS AND OVER: DURATION OF STAY AT USUAL RESIDENCE BY STATE OF USUAL RESIDENCE, AUSTRALIA, 31 MAY 1986

Duration of stay at usual residence of 31 May 1986	*State of usual residence at 31 May 1986—*								
	N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Australia*
					—'000—				
Less than 1 year:									
1–12 weeks	154.9	93.8	91.5	39.2	51.6	15.0	7.1	8.6	461.7
13–25 weeks	147.0	103.8	94.0	32.1	52.4	10.0	7.1	8.3	454.7
26–38 weeks	174.2	123.6	97.5	49.7	57.8	16.9	5.0	8.8	533.6
39–51 weeks	101.8	87.1	68.8	31.2	37.8	9.9	2.4	4.6	343.5
Total	*577.8*	*408.3*	*351.8*	*152.2*	*199.6*	*51.8*	*21.7*	*30.3*	*1,793.5*
1–4 years	1,089.8	842.5	591.6	270.8	328.5	89.6	38.1	56.0	3,307.0
5–9 years	799.4	564.5	333.2	179.6	165.2	55.1	17.1	35.1	2,149.2
10–14 years	502.2	411.3	197.5	132.6	138.8	41.1	9.0	22.3	1,454.9
15–19 years	417.0	331.6	153.1	105.6	75.1	32.5	8.4	21.9	1,145.2
20–24 years	260.8	204.7	80.4	71.3	47.8	22.8	1.7	9.2	698.7
25 years or more	462.8	364.2	174.5	128.8	77.9	36.4	*	7.1	1,252.2
Total	*4,109.9*	*3,127.1*	*1,882.2*	*1,041.0*	*1,032.9*	*329.4*	*96.3*	*181.9*	*11,800.8*

Recent Internal Migration Surveys show that about 16 per cent of all persons change their residence within a twelve month period. Of those who change their residence, about 50 per cent remain within the same capital city and another 40 per cent within the same State or Territory. Nearly 10 per cent are interstate movements.

INTERNAL MIGRATION *(a)*, AUSTRALIA

	Year ended—			
	30 June 1980	*30 June 1982*	*30 June 1984 (b)*	*31 May 1986 (b)*
		—'000—		
Changed usual residence—				
Intrastate—				
Within the same metropolitan area *(c)*	1,180.6	1,111.3	1,326.1	1,195.4
To and from metropolitan areas *(c)*	238.0	228.0	227.4	220.3
Within the same non-metropolitan area	708.4	722.6	780.3	770.8
Total	2,127.0	2,061.8	2,333.8	2,186.6
Interstate	250.2	287.1	214.3	252.3
Total	*2,377.3*	*2,348.9*	*2,548.2*	*2,438.9*
Did not change usual residence	*11,817.3*	*12,262.0*	*12,584.1*	*13,009.8*
Total	**14,194.6**	**14,610.9**	**15,132.3**	**15,448.6**
	—Movers per thousand of population—			
Mobility rate	167	161	168	158

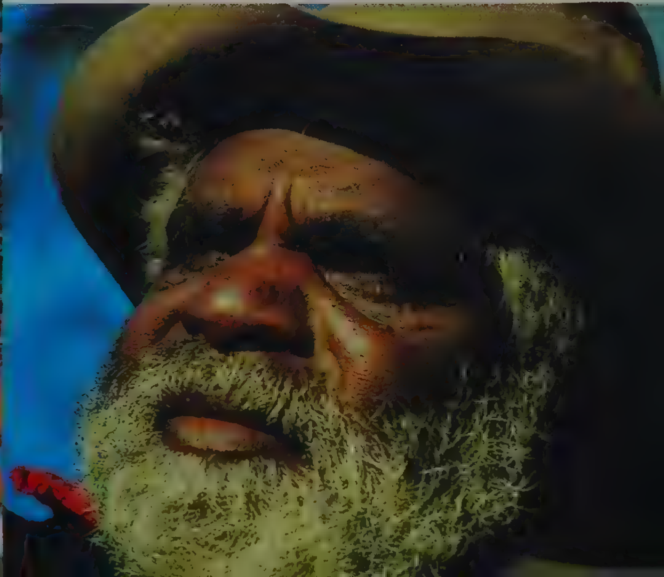
(a) Non-institutionalised civilians who were resident in Australia at the beginning and end of the survey year. *(b)* Excludes persons resident in Australia but with no usual residence at the beginning and/or end of the survey year. *(c)* Metropolitan areas exclude Canberra and Darwin prior to 1983.

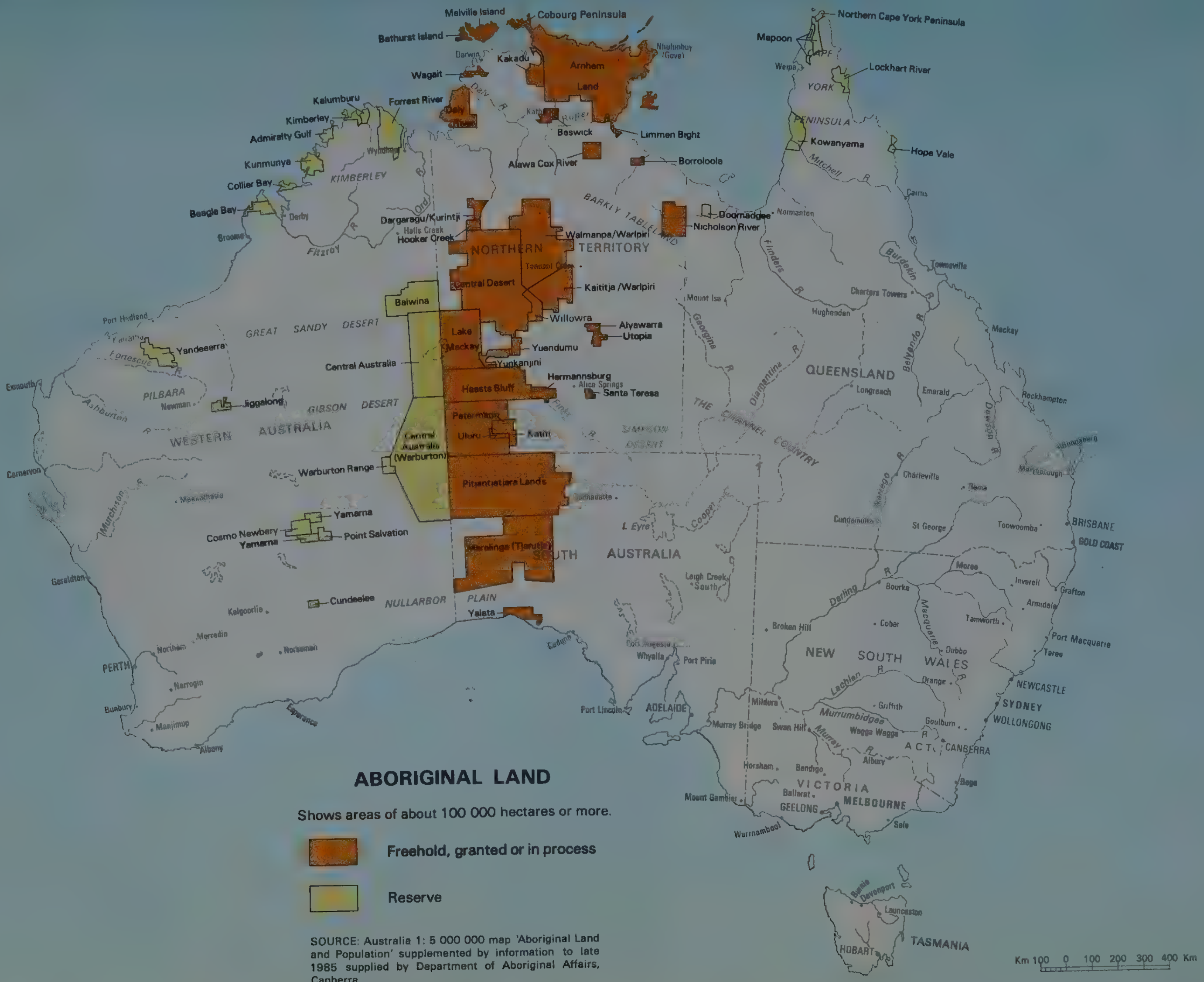
The predominant reason for moving given by persons aged 15 and over at the 1986 Internal Migration Survey, particularly for intrastate movers, was housing. Of all intrastate movers, 63 per cent gave housing as the main reason. The next most quoted reason—employment—accounted for only 16 per cent of intrastate moves. On the other hand employment emerged as the main reason for interstate moves. It accounted for 53 per cent of interstate moves, whilst housing only accounted for 10 per cent.

The level of net interstate migration has been an important influence on the distribution of Australia's population amongst the States and Territories. Historically it has been much more important than differential fertility or mortality and in many periods more important than overseas migration. The table below presents estimates of net interstate migration for the thirteen intercensal periods between 1881 and 1981 and the subsequent financial years from 1981–82 to 1985–86. Net interstate migration tends to be volatile in nature and large gains and losses have been recorded by the States.

ABORIGINAL AUSTRALIANS

otographs — *Promotion Australia.*




Melville Island
Cobourg Peninsula
Bathurst Island
Darwin
Kakadu
Arnhem Land
Nhulunbuy (Gove)
Wagait
Daly River
Kalumburu
Forrest River
Kimberley
Admiralty Gulf
Kunmunya
Collier Bay
Beagle Bay
Broome
Derby
Wyndham
KIMBERLEY
Fitzroy R
Ord
Beswick
Limmen Bight
Alawa Cox River
Borroloola
Dargaragu/Kurintji
Halls Creek
Hooker Creek
NORTHERN TERRITORY
Central Desert
Tennant Creek
Walmanpa/Warlpiri
Kaititja /Warlpiri
Willowra
Alyawarra
Utopia
Yuendumu
Yunkanjini
Lake Mackay
Hermannsburg
Alice Springs
Santa Teresa
Haasts Bluff
Petermann
Uluru
Katiti
Balwina
Central Australia
Central Australia (Warburton)
Warburton Range
Pitjantjatjara Lands
Maralinga (Tjarutja)
Yalata
BARKLY TABLELAND
Nicholson River
Doomadgee
Normanton
Mapoon
Weipa
Northern Cape York Peninsula
Lockhart River
CAPE YORK PENINSULA
Kowanyama
Hope Vale
Mitchell R
Cairns
Townsville
Burdekin R
Charters Towers
Hughenden
Mount Isa
Flinders R
Georgina R
Diamantina R
QUEENSLAND
Longreach
Emerald
Belyando R
Mackay
Rockhampton
Dawson R
Bundaberg
Maryborough
Charleville
Roma
Warrego R
Cunnamulla
St George
Toowoomba
BRISBANE
GOLD COAST
THE CHANNEL COUNTRY
SIMPSON DESERT
Finke R
Oodnadatta
L Eyre
Cooper
SOUTH AUSTRALIA
Leigh Creek South
Port Augusta
Whyalla
Port Pirie
Port Lincoln
Ceduna
ADELAIDE
Murray Bridge
Mount Gambier
Port Hedland
Yarraloola
Fortescue R
Yandeearra
GREAT SANDY DESERT
PILBARA
Newman
Jiggalong
GIBSON DESERT
WESTERN AUSTRALIA
Ashburton R
Exmouth
Carnarvon
Murchison R
Meekatharra
Yamarna
Cosmo Newbery
Yamarna
Point Salvation
Geraldton
Kalgoorlie
Cundeelee
NULLARBOR PLAIN
Merredin
Northam
Norseman
PERTH
Narrogin
Bunbury
Manjimup
Albany
Esperance
Broken Hill
Cobar
Bourke
Darling R
Moree
Inverell
Armidale
Grafton
Tamworth
Macquarie
Dubbo
Port Macquarie
Taree
NEW SOUTH WALES
Lachlan R
Orange
Griffith
Mildura
Murrumbidgee
Wagga Wagga
Goulburn
NEWCASTLE
SYDNEY
WOLLONGONG
A C T
CANBERRA
Swan Hill
Murray
Albury
Bega
Horsham
Bendigo
VICTORIA
Ballarat
GEELONG
MELBOURNE
Sale
Warrnambool
Burnie
Devonport
Launceston
HOBART
TASMANIA
Km 100 0 100 200 300 400 Km

ABORIGINAL LAND

Shows areas of about 100 000 hectares or more.

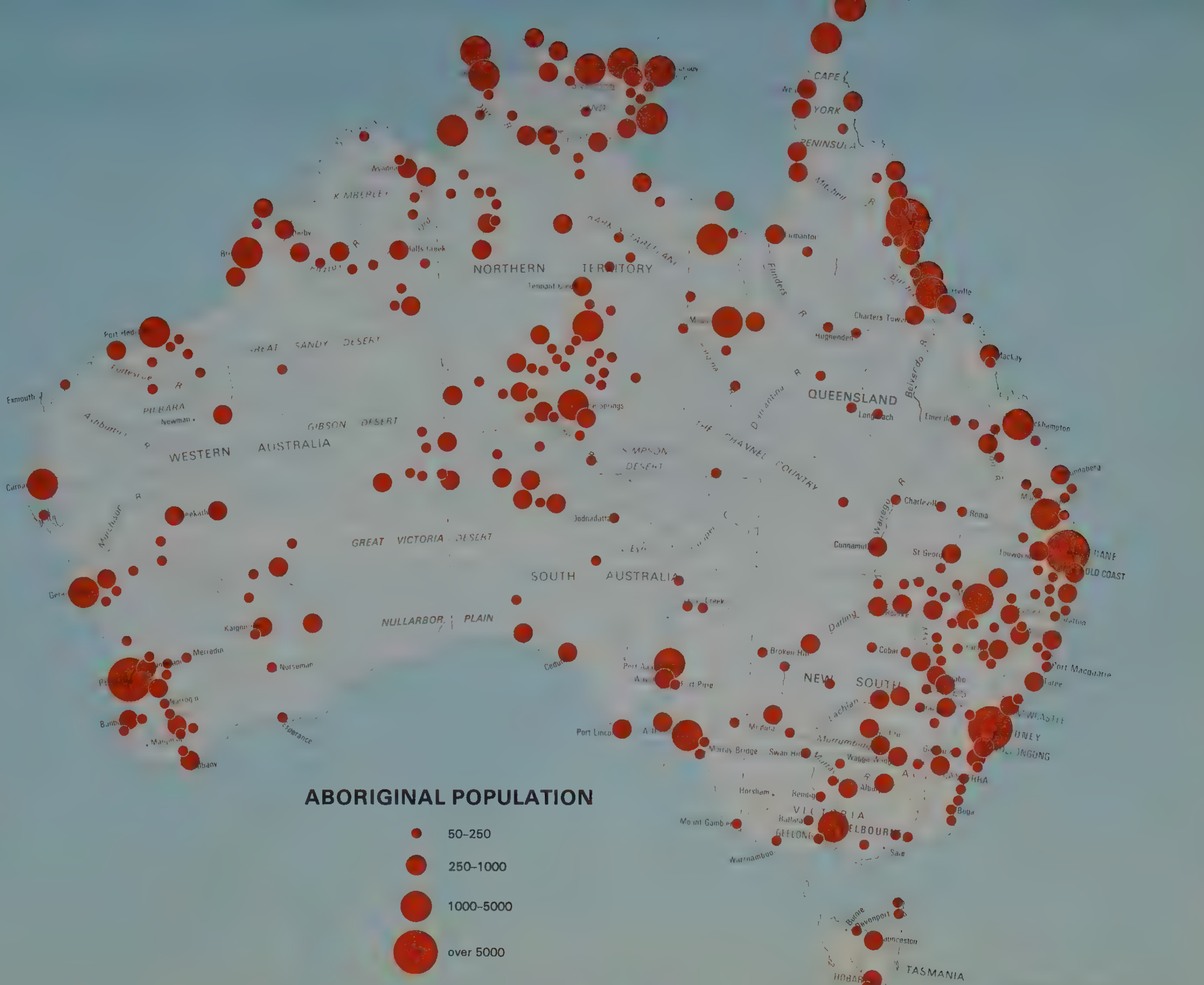
🟧 Freehold, granted or in process

🟨 Reserve

SOURCE: Australia 1: 5 000 000 map 'Aboriginal Land and Population' supplemented by information to late 1985 supplied by Department of Aboriginal Affairs, Canberra.

NATMAP

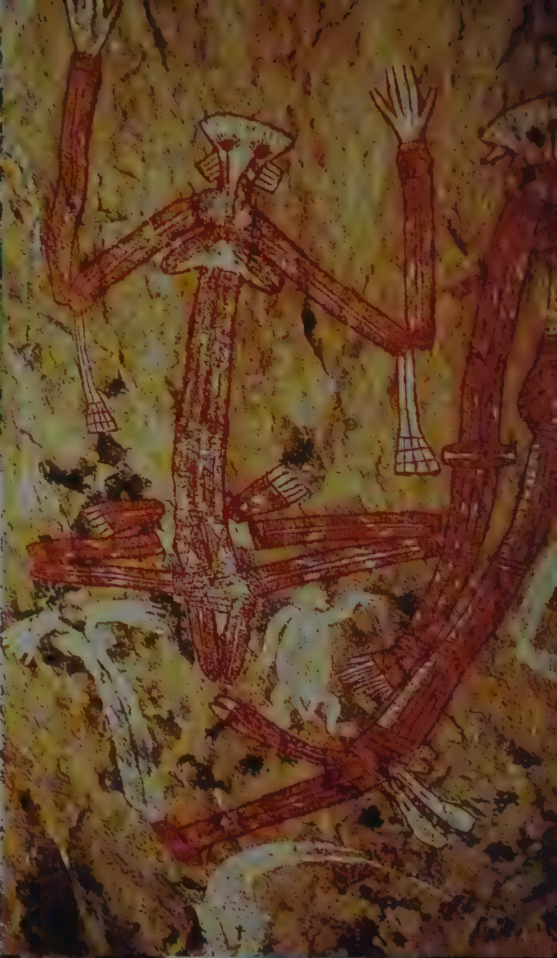
NMP 86/008.11


ABORIGINAL POPULATION
50–250
250–1000
1000–5000
over 5000
CAPE YORK PENINSULA
Mitchell R
Normanton
Flinders R
Burdekin R
Townsville
Charters Towers
Hughenden
Mackay
Belyando R
QUEENSLAND
Longreach
Emerald
Rockhampton
Bundaberg
Diamantina R
THE CHANNEL COUNTRY
Warrego R
Charleville
Roma
Cunnamulla
St George
Toowoomba
BRISBANE
GOLD COAST
Darling
Broken Hill
Cobar
NEW SOUTH WALES
Port Macquarie
Taree
NEWCASTLE
SYDNEY
WOLLONGONG
CANBERRA
Bega
Lachlan
Murrumbidgee
Murray R
Wagga Wagga
Albury
Mildura
Swan Hill
Murray Bridge
Horsham
Bendigo
Ballarat
VICTORIA
MELBOURNE
GEELONG
Warrnambool
Mount Gambier
Sale
Port Lincoln
Port Augusta
Port Pirie
Ceduna
Oodnadatta
Lake Eyre
SOUTH AUSTRALIA
NULLARBOR PLAIN
SIMPSON DESERT
Alice Springs
Tennant Creek
NORTHERN TERRITORY
BARKLY TABLELAND
Halls Creek
KIMBERLEY
Wyndham
Derby
Broome
Fitzroy R
Port Hedland
Fortescue R
PILBARA
Newman
Exmouth
Ashburton R
GREAT SANDY DESERT
GIBSON DESERT
WESTERN AUSTRALIA
GREAT VICTORIA DESERT
Carnarvon
Murchison R
Meekatharra
Geraldton
Kalgoorlie
Norseman
Esperance
Merredin
Narrogin
Perth
Bunbury
Manjimup
Albany
TASMANIA
Burnie
Devonport
Launceston
HOBART
Km 100 0 100 200 300 400 Km

SOURCE: Based on data to late 1983 supplied by the Department of Aboriginal Affairs, Canberra.

Aboriginal dancing display.

Cave painting near 'Oenberna', N.W. Arnhemland.

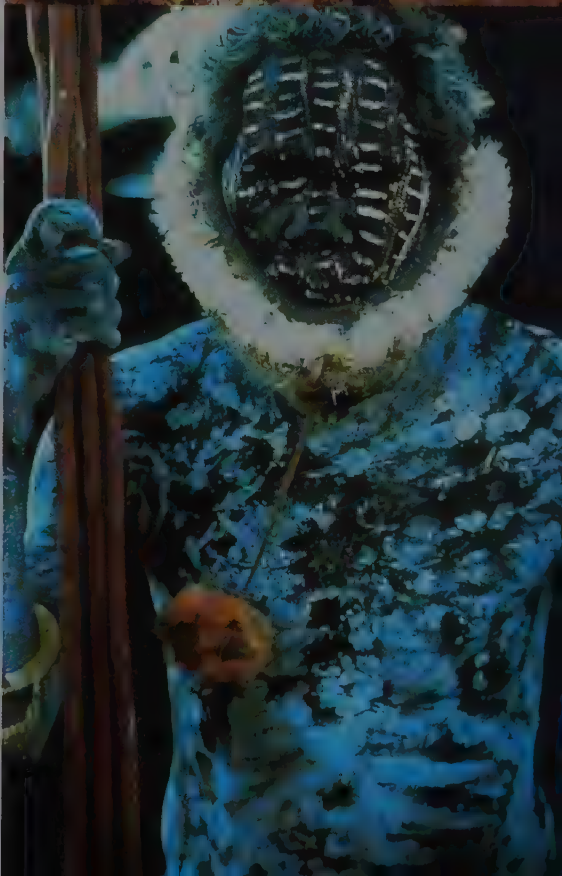


ABORIGINAL CULTURE

Photographs — Promotion Australia.

Typical corroboree decoration.

Potter at work, Bathurst Island.



NET INTERSTATE MIGRATION, AUSTRALIA

Period	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*
Intercensal periods—								
(*a*)								
1881–91	21.4	7.8	7.3	−31.6	1.7	−6.5	—	—
1891–1901	5.2	−64.0	6.4	−16.7	69.7	−0.7	—	—
1901–11	16.3	−38.6	10.2	−11.1	32.2	−11.0	—	—
1911–21	40.2	−8.8	0.5	5.6	−20.8	−16.8	—	—
1921–33	0.7	3.2	14.3	−5.5	0.6	−18.2	0.5	4.4
1933–47	2.8	18.6	−6.6	−5.2	−10.8	−7.1	4.2	4.2
1947–54	−34.2	−3.5	22.7	7.0	1.4	1.1	1.6	4.1
1954–61	−23.6	1.9	15.4	4.1	−7.7	−6.3	4.1	12.0
1961–66	−15.8	−19.5	10.2	0.8	8.6	−7.1	3.6	19.2
1966–71	−18.5	−33.4	17.6	−15.0	22.6	−7.1	10.7	23.1
(*b*)								
1966–71	−21.8	−28.4	16.7	−17.9	24.1	−7.1	9.2	25.2
1971–76	−78.7	−41.0	69.8	6.7	20.7	−4.2	−1.2	27.8
1976–81	−26.3	−58.4	88.2	−15.2	11.1	−4.5	4.7	0.5
Financial years—								
(*c*)								
1975–76	−15.5	−13.5	12.5	1.5	8.9	−0.6	3.1	3.6
1980–81	−15.0	−15.4	35.1	−5.1	2.1	−1.0	0.3	−1.0
1981–82	−17.6	−14.5	34.6	−7.8	4.4	−2.2	3.3	−0.2
1982–83	15.6	−5.2	20.0	−2.6	2.3	−1.4	1.6	1.0
1983–84	−9.6	−4.1	8.3	−1.9	1.2	0.5	1.6	4.1
1984–85	−8.7	−6.6	11.0	−5.1	2.4	0.5	1.5	5.1
1985–86	−11.2	−11.2	12.3	−3.7	6.3	0.4	0.3	6.7

Sources: (*a*) Rowland, D.T. 1979: *Internal Migration in Australia*, Census Monograph Series, Australian Bureau of Statistics, Canberra. P. 20, refers only to movement of Australian born persons, estimated by use of intercensal survival method. (*b*) Di Iulio, O.B. *Post Censal Interstate Migration Estimates, 1966–81*. ABS Occasional Paper 1984/2. Based on Census results of Internal Migration adjusted for movement of persons aged 0–4 years. (*c*) Census data, 1976 and 1981.

New South Wales gained in population considerably from interstate migration between 1881 and 1921. Minimal gains were made between 1921 and 1947 but from then on the State has experienced substantial net losses, particularly to Queensland and, since the 1960s, to the Australian Capital Territory and Western Australia.

Victoria experienced high net losses during the depression of the 1890s and in the intercensal period 1901–1911. There was a period of large net gains between 1933 and 1947, but by 1961–1966 the State had reverted to net losses which still persist. Major losses occurred to Queensland in the twenty years from 1966 to 1986.

Queensland gained in all intercensal periods, excepting 1933–1947. This gain has been especially large since 1947, and in particular between 1971 and 1986.

South Australia has experienced fluctuating interstate migration, recording large losses between 1881 and 1911, noticable gains in the 1947–1954 period, and gradual declines until, in 1966–1971, it had returned to large losses. The State gained again between 1971 and 1976 but since then has reverted to losses, although the extent of these has been considerably less than for New South Wales and Victoria.

Western Australia gained considerably from interstate migration between 1891 and 1911, but the following fifty years were generally a period of net losses. From 1961 however, Western Australia has recorded consistent net gains, mainly from Victoria, South Australia and, until 1983, from New South Wales.

Tasmania has a long history of losing population to other States. These losses were greatest between 1901 and 1933. Since 1983, however, the historical trend has been reversed and Tasmania has experienced small gains in net migration.

Northern Territory and Australian Capital Territory have consistently gained from interstate migration. The Australian Capital Territory in particular recorded very large gains in the seventeen years to 1976. Net migration for the Northern Territory between 1971 and 1976 should be interpreted in the light of the impact of Cyclone Tracy on Darwin in December 1974 which caused an evacuation of a large part of the Territory's population in December 1974 and early 1975. Net migration to both Territories slowed towards the end of the 1970s with Northern Territory receiving only small gains in the 1980s. The Australian Capital Territory lost population at the beginning of the 1980s, but since 1982 has experienced increasing gains.

During the fifteen years from 1966 to 1981, the flow of persons interstate increased, both numerically and in proportion to the population. Recent census data indicate that for the three five-year periods, 1966–71, 1971–76 and 1976–81, the number of interstate movers was 461,700, 569,500 and 651,200 respectively. This increase was evident for both males and females, with the masculinity ratio of interstate flows remaining virtually constant at 107.

INTERSTATE MOVERS BY AGE, MOBILITY RATES (*a*) AND SEX RATIOS (*b*), AUSTRALIA

Age group Years	*Number of interstate movers*			*Mobility rates*		
	1966–71	*1971–76*	*1976–81*	*1966–71*	*1971–76*	*1976–81*
1–4	..	..	..	..	..	..
5–9	55,536	69,810	75,603	46	56	61
10–14	44,741	49,979	59,096	37	40	46
15–19	40,878	49,899	53,025	37	41	42
20–24	76,900	83,239	89,139	71	75	72
25–29	69,328	99,102	100,337	75	88	85
30–34	47,047	64,271	85,729	59	68	72
35–39	32,961	42,174	55,606	45	52	57
40–44	27,270	27,380	34,104	35	38	42
45–49	20,779	22,328	21,948	27	29	30
50–54	13,940	17,993	19,155	21	24	25
55–59	10,063	12,933	16,929	17	21	23
60–64	7,760	11,008	14,769	16	20	25
65 and over	14,456	19,402	25,745	14	16	18
Total	**461,659**	**569,518**	**651,185**	**40**	**46**	**49**
Sex ratios—						
Interstate movers	107	106	107			
Total population	101	100	100			

(*a*) Interstate movers per 1,000 population of the same age group at end of period. (*b*) The number of males per 100 females.

Interstate mobility rates by age have revealed a clear and consistent life cycle pattern in the propensity of persons to move interstate. Looking at the five-yearly migration data, there was, initially, an above-average rate for the 5–9 year age group because of the high mobility of their parents. This was followed by a period of below average mobility in the early teenage years. Mobility was highest at ages 20–39 years, from whence it steadily declined with age. The highest mobility rates occurred at ages 25–29 years and the lowest at ages 65 and over. Females were generally less likely to move interstate than males, with differences being most pronounced during the child-rearing ages from 25 to 45 years.

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Colonial Censuses, 1824–1901.

CHAPTER SEVEN

LABOUR

The principal subjects covered in this chapter are labour force, unemployment, wage rates, earnings, hours of work, labour costs, industrial disputes, trade unions and Commonwealth Government employment and training programs. Further detail on these subjects is contained in *Labour Statistics, Australia* (6101.0), *A Guide to Labour Statistics* (6102.0) and in other publications listed at the end of this chapter. A brief history of labour statistics follows.

HISTORY OF LABOUR STATISTICS

Early in this century, some limited labour statistics were available from the population censuses. The demand for data on a more regular basis grew until, early in the second decade, the Labour and Industrial Branch of the Bureau of Statistics was formed.

Essentially, that Branch was responsible for producing information on trade unionism, wages and hours of labour, wage rates, strikes and lockouts, and unemployment. In December 1912 the *Labour and Industrial Branch Report No. 1* was published. This was the forerunner of many such reports presenting a range of labour statistics in a comparable form, on a regular basis.

Industrial relations

Trade union membership statistics have been produced annually since 1891. The number of separate trade unions has been published annually from 1912.

Industrial disputes statistics were compiled quarterly from 1913 until 1970 when the series became monthly.

INDUSTRIAL RELATIONS, AUSTRALIA

December	*Disputes*	*Working days lost*	*Unions*	*Union members*
	(No.)	('000)	(No.)	('000)
1891	n.a.	n.a.	n.a.	54.9
1901	n.a.	n.a.	n.a.	97.2
1911	n.a.	n.a.	n.a.	364.7
1916	508	1,644.8	392	546.6
1921	624	1,286.2	382	703.0
1931	134	246.0	362	769.0
1941	567	984.2	374	1,075.7
1951	1,344	873.0	359	1,690.3
1961	815	606.8	355	1,894.6
1966	1,273	732.1	330	2,123.5
1971	2,404	3,068.6	355	2,451.4
1976	2,055	3,799.2	322	2,800.0
1981	2,915	4,192.2	324	2,994.1
1982	2,060	2,158.0	322	3,012.4
1983	1,787	1,641.4	319	2,985.2
1984	1,965	1,307.4	329	3,028.5
1985	1,845	1,256.2	323	3,154.2
1986	1,687	1,390.7	326	3,186.2

The labour force

Prior to the 1960s, the major source of data relating to employment and unemployment was the Population Census. Information was also obtained from data supplied by trade unions from 1891 and from payroll tax returns from 1941.

Statistics for persons in the occupational status categories 'at work', 'not at work' and 'total in work force', from the Population Censuses held from 1911 to 1961, are presented in the table below. It should be noted that these terms are not directly comparable to current definitions of persons employed, unemployed and the total labour force.

OCCUPATIONAL STATUS OF THE POPULATION OF AUSTRALIA ('000)

	At work		*Not at work*		*Total in work force*
Census	*Males*	*Females*	*Males*	*Females*	*Persons*
1911	1,473.4	364.5	48.0	8.3	1,894.2
1921	1,625.8	417.1	139.4	21.5	2,203.8
1933	1,734.4	511.4	405.4	75.8	2,727.1
1947	2,412.7	700.2	66.6	16.9	3,196.4
1954	2,815.6	831.4	41.0	14.0	3,702.0
1961	3,037.3	1,015.2	128.6	44.0	4,225.1

In November 1960, the Labour Force Survey was introduced to provide regular data on the labour force, employment and unemployment. It was a sample survey of households, initially undertaken quarterly and covering only the capital cities. In February 1964, it was extended to cover the whole of Australia. The survey has been undertaken on a monthly basis since February 1978.

CIVILIAN POPULATION: LABOUR FORCE STATUS, AUSTRALIA ('000)

	Employed		*Unemployed*		*Labour force*
August	*Males*	*Females*	*Males*	*Females*	*Persons*
1966	3,365.6	1,458.2	38.9	39.7	4,902.5
1971	3,712.7	1,803.0	43.8	48.9	5,608.4
1976	3,836.3	2,061.5	156.6	136.1	6,190.5
1981	4,057.9	2,335.8	200.4	180.1	6,774.3
1982	4,024.3	2,355.0	271.7	189.7	6,840.7
1983	3,903.6	2,337.4	429.7	257.1	6,927.9
1984	4,012.4	2,449.9	381.5	223.1	7,066.9
1985(*a*)	4,102.8	2,587.5	346.6	221.0	7,257.9
1986	4,179.8	2,705.9	348.0	247.6	7,481.4

(*a*) Discontinuity in series. Estimates from 1985 are based on a revised definition of employment.

Average weekly hours of work

AVERAGE WEEKLY HOURS OF WORK (*a*), AUSTRALIA

December	*Males*	*Females*	*December*	*Males*	*Females*
1914	48.87	49.11	1971	39.87	39.67
1919	47.41	47.54	1972	39.87	39.67
1924	46.66	46.02	1973	39.86	39.67
1929	45.34	44.79	1974	39.86	39.67
1934	45.36	44.81	1975	39.86	39.67
1939	44.29	44.36	1976(*b*)	39.37	39.29
1944	43.61	44.03	1977	39.34	39.28
1949	39.96	40.00	1978	39.34	39.28
1954	39.95	40.00	1979	39.32	39.27
1959	39.96	39.67	1980	39.31	39.27
1964	39.96	39.67	1981	39.29	39.25
1965	39.96	39.67	1982	38.77	39.07
1966	39.96	39.67	1983	38.70	39.01
1967	39.96	39.67	1984	38.58	38.74
1968	39.95	39.67	1985	38.52	38.63
1969	39.95	39.67	1986	38.52	38.61
1970	39.91	39.67			

(*a*) Weighted average standard hours of work (excluding overtime) in a full week as prescribed in awards, determinations and collective agreements. (*b*) Discontinuity in series due to a major reweighting.

Hours of work statistics have been produced since 1914, based on the standard number of hours constituting a full week's work as prescribed by industrial tribunals. These statistics are still compiled, although they are now supplemented by data on hours of work collected in the monthly Labour Force Survey and the Surveys of Employers.

Award rates of pay indexes and average weekly earnings

Rates of pay statistics were first produced in 1914. Information related to minimum rates of pay prescribed under awards, determinations and registered agreements. The series which was compiled quarterly from 1914 was replaced by a monthly series from 1957 for males and from 1967 for females.

The award rates of pay indexes, like other indexes, depict movements. They are designed to measure general trends in award rates of pay.

Statistics on average weekly earnings, derived from employment and wages recorded on payroll tax returns, were first compiled in the early 1940s. Average weekly earnings statistics were compiled using this method until 1981, when a quarterly sample survey of employers was introduced.

WAGE AND SALARY EARNERS AND AVERAGE WEEKLY EARNINGS, AUSTRALIA

	Weekly award Rates of Pay Index (a)		*Average weekly earnings (b)*		*Weekly Award Rates of Pay Index (a)*		*Average weekly earnings (b)*
Period	*Males*	*Females*	*($) Males*	*Period*	*Males*	*Females*	*($) Males*
1914	4.2	2.3	n.a.	1971	47.4	39.1	89.90
1919	5.7	3.1	n.a.	1972	52.1	43.3	97.30
1924	7.2	4.2	n.a.	1973	59.8	54.2	112.20
1929	7.7	4.5	n.a.	1974	81.2	76.2	143.90
1934	6.2	3.7	n.a.	1975	90.8	90.4	163.70
1939	7.6	4.4	n.a.	1976	104.3	104.3	182.10
1944	9.3	6.0	13.00	1977	114.5	114.7	198.00
1949	13.0	9.1	18.80	1978	123.3	123.2	212.70
1954	22.1	16.6	33.20	1979	129.9	128.4	231.90
1959	26.5	20.1	42.20	1980	144.9	144.6	270.00
1964	30.5	23.6	53.80	1981	166.8	164.3	296.00
1965	31.4	24.2	55.70	1982	185.5	183.7	337.60
1966	33.1	25.5	59.00	1983	194.8	193.1	362.00
1967	34.6	27.1	62.50	1984	203.4	201.9	389.50
1968	37.6	29.0	67.60	1985	216.7	215.5	413.90
1969	39.8	31.4	73.60	1986	221.7	221.4	446.30
1970	41.6	33.0	80.40				

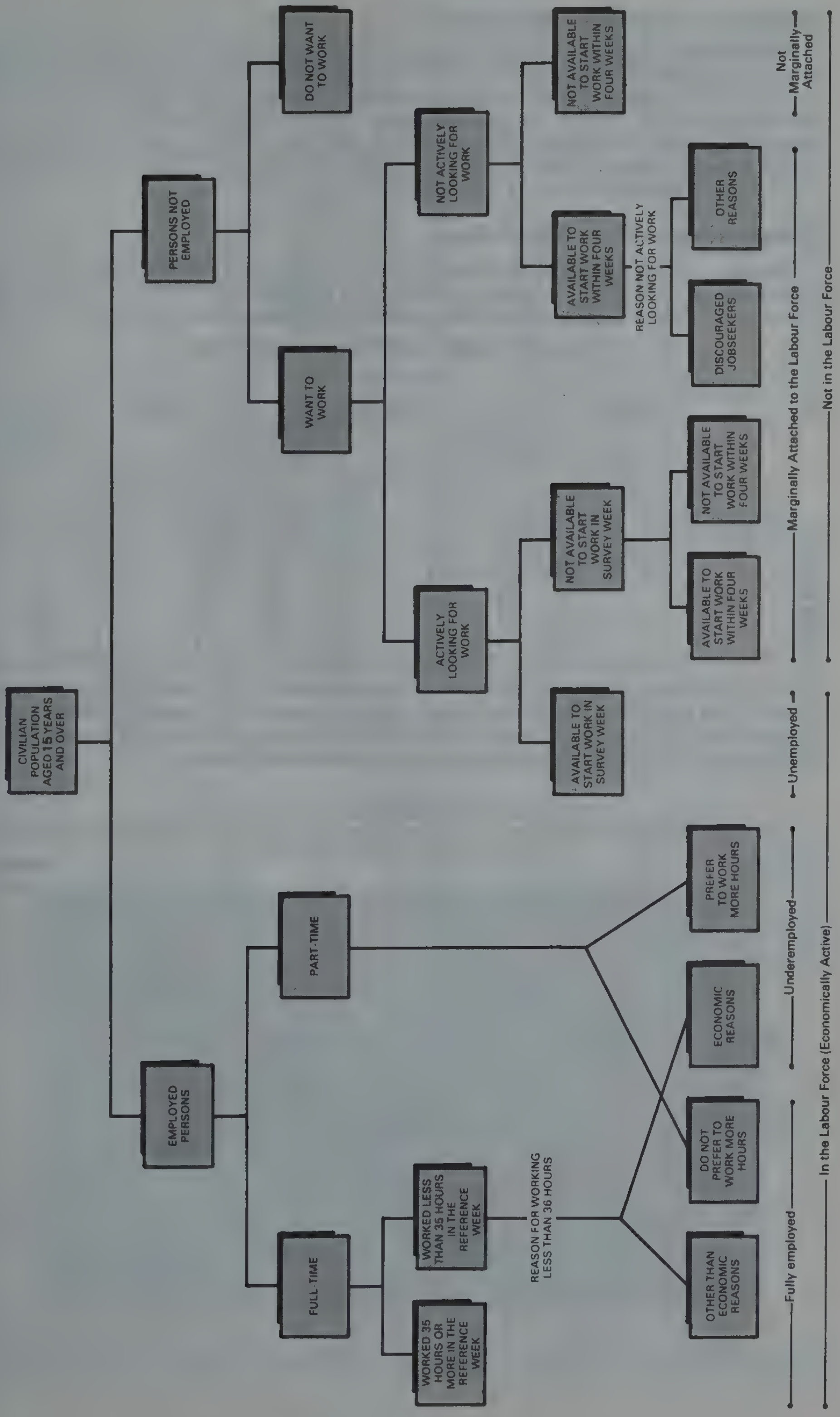
(*a*) As at 31 December. (*b*) From 1944 to 1980 estimates relate to the whole December quarter; from 1981, reference period relates to the pay period ending on or before the third Friday in November each year.

The labour force

Fundamental to the measurement of employment and unemployment is the concept of the labour force. The labour force is defined broadly as those persons aged 15 and over who during a particular week are either employed or unemployed. The labour force represents the total official supply of labour available to the labour market during a given week.

This section presents some summary statistics on the civilian labour force drawn from the ABS monthly Labour Force Survey and associated supplementary surveys. Set out below is a range of characteristics such as whether persons are employed, unemployed or not in the labour force, together with demographic information (i.e. age, sex, marital status, birthplace, etc.). For a description of the Labour Force Survey and its relationship to the Population Census *see Year Book* No 68. Further details concerning the scope, coverage and survey methods (as well as more detailed statistics) of the labour force and supplementary surveys can be found in the publications listed at the end of this chapter.

THE AUSTRALIAN LABOUR FORCE FRAMEWORK


CIVILIAN POPULATION AGED 15 YEARS AND OVER
EMPLOYED PERSONS
PERSONS NOT EMPLOYED
FULL-TIME
PART-TIME
WANT TO WORK
DO NOT WANT TO WORK
WORKED 35 HOURS OR MORE IN THE REFERENCE WEEK
WORKED LESS THAN 35 HOURS IN THE REFERENCE WEEK
REASON FOR WORKING LESS THAN 36 HOURS
ACTIVELY LOOKING FOR WORK
NOT ACTIVELY LOOKING FOR WORK
AVAILABLE TO START WORK IN SURVEY WEEK
NOT AVAILABLE TO START WORK IN SURVEY WEEK
AVAILABLE TO START WORK WITHIN FOUR WEEKS
NOT AVAILABLE TO START WORK WITHIN FOUR WEEKS
REASON NOT ACTIVELY LOOKING FOR WORK
OTHER THAN ECONOMIC REASONS
DO NOT PREFER TO WORK MORE HOURS
ECONOMIC REASONS
PREFER TO WORK MORE HOURS
AVAILABLE TO START WORK WITHIN FOUR WEEKS
NOT AVAILABLE TO START WORK WITHIN FOUR WEEKS
DISCOURAGED JOBSEEKERS
OTHER REASONS
Fully employed
Underemployed
Unemployed
Marginally Attached to the Labour Force
Not Marginally Attached
In the Labour Force (Economically Active)
Not in the Labour Force

Australian labour force framework

The need to reflect the dynamic structure and characteristics of the labour market and the changes required to respond to evolving socio-economic conditions and policy concerns have resulted in significant modifications to the original Labour Force Survey framework that was developed in the 1960s. An ever-increasing demand to obtain information concerning underemployment and information on persons wanting work but not defined as unemployed has led to improvements to the conceptual basis of the Australian labour force framework. The modified framework is set out schematically on page 295.

Characteristics of the labour force

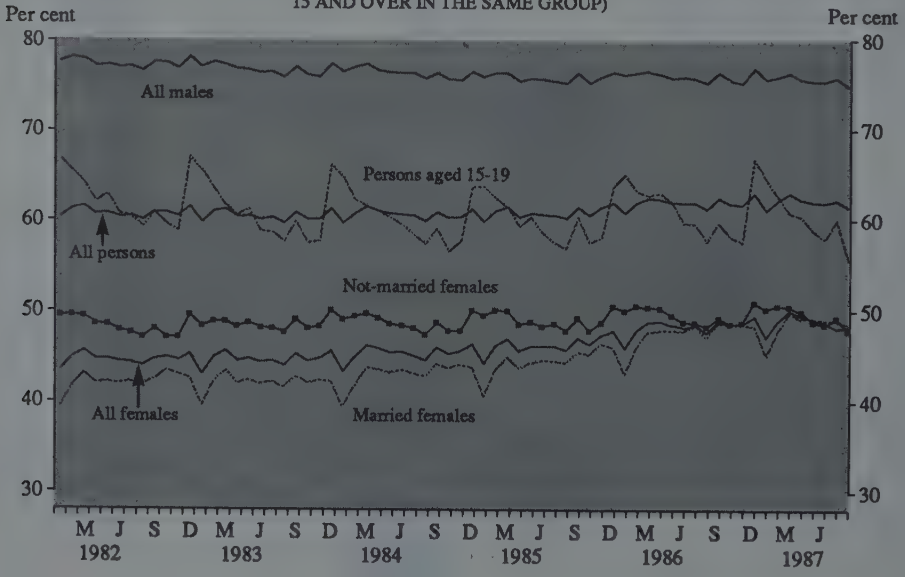
The size and composition of the labour force is not static over time. Growth of the labour force is due to an increase/decrease in labour force participation or in the population aged 15 and over. The table below sets out the growth of the labour force by source.

LABOUR FORCE: SOURCES OF GROWTH
(per cent)

	Males			*Females*			*Persons*		
		Proportion of change due to			*Proportion of change due to*			*Proportion of change due to*	
Year ending August	*Percentage change in labour force*	*Population growth*	*Labour force participation*	*Percentage change in labour force*	*Population growth*	*Labour force participation*	*Percentage change in labour force*	*Population growth*	*Labour force participation*
1982	0.9	2.1	−1.2	1.1	2.1	−1.0	1.0	2.1	−1.1
1983	0.9	1.8	−0.9	2.0	1.8	0.2	1.3	1.8	−0.5
1984	1.4	1.6	−0.2	3.0	1.6	1.4	2.0	1.6	0.4
1985	1.0	1.6	−0.7	4.0	1.6	2.5	2.1	1.6	0.5
1986	2.0	2.1	—	6.2	2.0	4.1	3.7	2.1	1.7
1987	1.8	2.3	−0.4	3.8	2.2	1.4	2.6	2.3	0.3

One of the most important labour force measurements is the participation rate, which represents the proportion of the working age population who are in the labour force. Analysis of the participation rates provides the basis for monitoring changes in the size and composition of labour supply, particularly in terms of age, sex and marital status.

LABOUR FORCE PARTICIPATION RATES
(THE LABOUR FORCE IN EACH GROUP AS A PERCENTAGE OF THE CIVILIAN POPULATION AGED 15 AND OVER IN THE SAME GROUP)



The following two tables provide more detailed information on the labour force status of persons. The first table presents the age and sex composition of the total labour force as at August 1987. The second table shows changes in labour force status over time.

CIVILIAN LABOUR FORCE, BY AGE, AUGUST 1987

	Number ('000)					*Participation rate (per cent)*				
		Females					*Females*			
Age group	*Males*	*Married*	*Not married*	*Total*	*Persons*	*Males*	*Married*	*Not married*	*Total*	*Persons*
15–64.	4,547.4	1,806.3	1,233.0	3,039.3	7,586.7	83.8	53.9	62.0	56.9	70.4
15–19.	404.2	10.0	354.0	364.0	768.2	57.5	51.2	53.7	53.7	55.6
20–24.	592.1	149.8	341.6	491.5	1,083.6	89.5	64.2	81.9	75.5	82.6
25–34.	1,249.4	550.1	268.4	818.5	2,067.9	94.6	56.9	75.4	61.9	78.2
35–44.	1,124.1	623.5	143.1	766.7	1,890.8	94.4	65.1	68.9	65.8	80.3
45–54.	739.7	357.3	81.0	438.3	1,178.0	89.6	55.5	54.7	55.3	72.8
55–59.	281.2	84.1	28.5	112.6	393.8	74.5	29.8	32.7	30.5	52.8
60–64.	156.5	31.5	16.3	47.8	204.3	44.7	12.6	14.4	13.2	28.7
65 and over . . .	61.9	14.0	12.4	26.4	88.4	8.5	3.6	2.0	2.6	5.1
Total	**4,609.3**	**1,820.3**	**1,245.5**	**3,065.8**	**7,675.1**	**74.9**	**48.6**	**47.9**	**48.3**	**61.4**

CIVILIAN POPULATION AGED 15 AND OVER: LABOUR FORCE STATUS

		Unemployed							
August	*Employed*	*Looking for full-time work*	*Looking for part-time work*	*Total*	*Labour force*	*Not in the labour force*	*Civilian population aged 15 years and over*	*Unemploy-ment rate*	*Partici-pation rate*
				—'000—				—per cent—	
				MALES					
1982 . . .	4,024.3	250.4	21.3	271.7	4,296.0	1,314.6	5,610.6	6.3	76.6
1983 . . .	3,903.6	409.5	20.2	429.7	4,333.3	1,379.2	5,712.5	9.9	75.9
1984 . . .	4,012.4	359.0	22.5	381.5	4,393.9	1,411.5	5,805.4	8.7	75.7
1985 . . .	4,089.0	324.5	23.7	348.1	4,437.1	1,459.7	5,896.9	7.8	75.2
1986 . . .	4,179.8	319.9	28.1	348.0	4,527.8	1,492.4	6,020.2	7.7	75.2
1987 . . .	4,262.3	317.3	29.7	347.0	4,609.3	1,548.5	6,157.8	7.5	74.9
				FEMALES					
1982 . . .	2,355.0	137.2	52.5	189.7	2,544.7	3,242.8	5,787.5	7.5	44.0
1983 . . .	2,337.4	197.9	59.3	257.1	2,594.6	3,299.1	5,893.7	9.9	44.0
1984 . . .	2,449.9	165.1	57.9	223.1	2,673.0	3,315.5	5,988.5	8.3	44.6
1985 . . .	2,557.1	162.4	60.7	223.0	2,780.1	3,302.8	6,082.8	8.0	45.7
1986 . . .	2,705.9	170.8	76.9	247.6	2,953.6	3,253.1	6,206.7	8.4	47.6
1987 . . .	2,810.8	178.1	76.9	254.9	3,065.8	3,279.6	6,345.4	8.3	48.3

The age at which a person leaves full-time education and the level of educational attainment reached can affect the labour force status of that person. The following two tables set out the differential effects of these characteristics.

LEAVERS FROM EDUCATIONAL INSTITUTIONS(*a*): LABOUR FORCE STATUS AND AGE, MAY 1987

	Leavers aged 15 to 19			*Leavers aged 20 to 24*		
Labour force status	*Males*	*Females*	*Persons*	*Males*	*Females*	*Persons*
			—'000—			
Employed	90.4	80.9	171.3	22.3	22.5	44.7
Full-time	80.8	62.8	143.6	19.9	18.5	38.4
Part-time	9.6	18.1	27.7	*	3.9	6.3
Unemployed	25.7	18.7	44.3	3.7	5.9	9.6
Labour force	116.1	99.6	215.6	26.0	28.4	54.4
Not in labour force	5.5	7.6	13.1	*	*	4.5
Total	**121.6**	**107.2**	**228.8**	**27.3**	**31.5**	**58.8**
			—per cent—			
Unemployment rate	22.1	18.7	20.6	14.2	20.9	17.7
Participation rate	95.5	92.9	94.3	95.0	90.1	92.4

(*a*) Leavers from educational institutions are persons who were full-time students at some time in the previous year but are not currently full-time students.

CIVILIAN POPULATION AGED 15 AND OVER(*a*): EDUCATIONAL ATTAINMENT AND LABOUR FORCE STATUS, FEBRUARY 1987

Educational attainment	*Employed*								
	Full time	*Part time*	*Total*	*Unemployed*	*In the labour force*	*Not in the labour force*	*Total*	*Participation rate*	*Unemployment rate*
				—'000—				—per cent—	
MALES									
With post-school qualifications	2,006.1	85.8	2,091.9	97.6	2,189.5	433.5	2,623.0	83.5	4.5
Degree	436.7	20.1	456.8	14.5	471.3	60.4	531.7	88.6	3.1
Trade qualification or apprenticeship	1,089.5	40.3	1,129.8	59.9	1,189.7	277.7	1,467.4	81.1	5.0
Certificate or diploma	470.9	24.3	495.2	21.9	517.1	93.6	610.7	84.7	4.2
Other	9.0	*	10.1	*	11.3	*	13.2	85.9	11.0
Without post-school qualifications (*b*)	1,951.6	134.8	2,086.3	279.6	2,365.9	819.2	3,185.1	74.3	11.8
Attended highest level of secondary school available	462.0	54.5	516.5	61.0	577.5	119.2	696.8	82.9	10.6
Did not attend highest level of secondary school available	1,485.7	80.0	1,565.7	216.9	1,782.6	686.8	2,469.3	72.2	12.2
Left at age—									
18 and over	30.3	*	32.6	5.6	38.2	8.6	46.8	81.6	14.7
16 or 17	536.8	30.5	567.3	77.6	644.9	90.3	735.3	87.7	12.0
14 or 15	779.2	37.9	817.2	117.7	934.8	409.6	1,344.4	69.5	12.6
13 and under	139.4	9.2	148.6	16.0	164.6	178.2	342.9	48.0	9.7
Never attended school	*	*	*	*	5.6	12.6	18.2	30.6	30.8
Still at school	*	50.8	52.7	18.2	70.8	213.3	284.1	24.9	25.7
Total	**3,959.5**	**271.4**	**4,230.9**	**395.4**	**4,626.3**	**1,466.0**	**6,092.3**	**75.9**	**8.5**
FEMALES									
With post-school qualifications	767.5	380.2	1,147.7	83.2	1,230.9	673.4	1,904.3	64.6	6.8
Degree	178.4	52.0	230.4	11.1	241.6	77.8	319.4	75.6	4.6
Trade qualification or apprenticeship	53.5	34.6	88.1	5.7	93.9	90.3	184.2	51.0	6.1
Certificate or diploma	526.7	287.1	813.8	64.3	878.1	492.3	1,370.4	64.1	7.3
Other	8.9	6.5	15.3	*	17.3	12.9	30.3	57.3	11.7
Without post-school qualifications (*b*)	948.6	604.9	1,553.5	197.3	1,750.9	2,352.3	4,103.2	42.7	11.3
Attended highest level of secondary school available	249.0	121.8	370.8	49.7	420.5	278.3	698.9	60.2	11.8
Did not attend highest level of secondary school available	696.8	481.9	1,178.8	147.3	1,326.1	2,048.0	3,374.0	39.3	11.1
Left at age—									
18 and over	11.1	*	15.1	*	18.4	21.8	40.3	45.8	18.3
16 or 17	298.3	158.6	456.9	60.5	517.4	407.1	924.5	56.0	11.7
14 or 15	341.0	291.4	632.4	75.5	707.8	1,272.2	1,980.0	35.7	10.7
13 and under	46.5	27.9	74.4	8.0	82.4	346.9	429.2	19.2	9.7
Never attended school	*	*	*	*	*	25.8	30.0	14.2	7.0
Still at school	*	65.8	66.1	23.7	89.8	182.2	272.0	33.0	26.4
Total	**1,716.4**	**1,050.9**	**2,767.3**	**304.2**	**3,071.5**	**3,207.9**	**6,279.5**	**48.9**	**9.9**

(*a*) Excludes students boarding at school, some patients in hospitals and sanatoriums and inmates of reformatories, gaols, etc. (*b*) Includes persons for whom secondary school qualifications could not be determined.

In the light of the changing economic and social conditions of recent years, there is increasing concern whether the labour offered by individuals can be considered to be 'adequately utilised' by the labour market. A person's labour is deemed to be underutilised if the person is either unemployed or underemployed. Underemployment is deemed to exist when a person who usually works full-time does not work full-time in the reference period for economic reasons, which includes stand downs, short time, or insufficient work, or when a person who worked part-time indicated a preference to work more hours.

Underutilisation, underemployment and unemployment are summarised in the following diagram in which each category is expressed as a percentage of the labour force.

Employment

This section provides a statistical summary of employment in Australia. Broadly, a person is considered to be employed if he or she is doing any work at all, regardless of the number of hours worked. In the statistics, employment is presented according to the demographic characteristics of employed persons, their occupation and industry, hours worked and whether they are full-time or part-time workers. Data for employed wage and salary earners by whether they work in the private or government sector and estimates for apprentices and qualified tradespersons are also included in this section. Most of the statistics on employment have been derived from the ABS monthly Labour Force Survey, the exception being the two tables on employed wage and salary earners by sector which were derived from the quarterly Survey of Employment and Earnings.

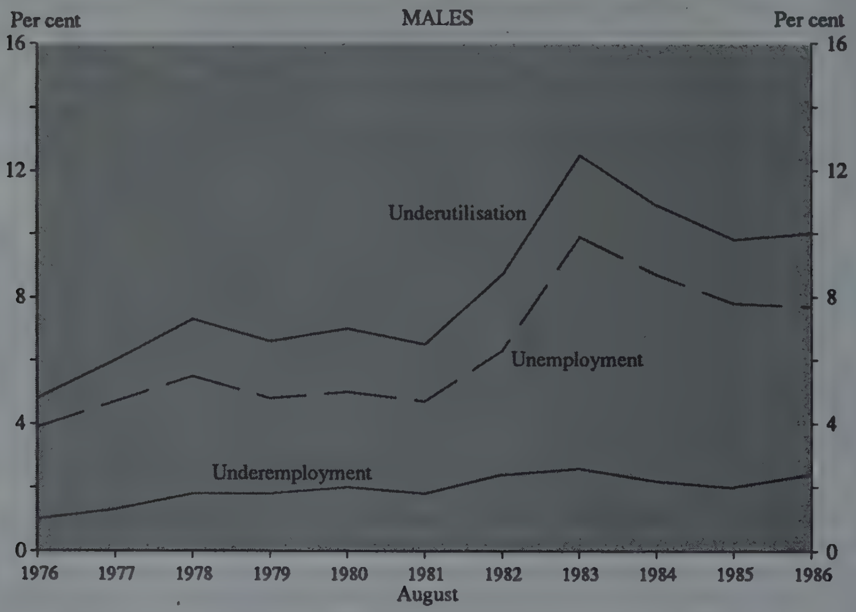
By relating employment levels to population levels, the magnitude of job growth in the economy can be evaluated. The measure relating these two levels is the employment/population ratio. Its usefulness lies in the fact that while movements in the employment level reflect net changes in the levels of persons holding jobs, movements in the ratio reflect net changes in the number of jobholders relative to changes in the size of the population. Note that while a rise in employment may not appear as a rise in the ratio because of continuous population growth, a decrease in employment will always appear as a fall in the ratio.

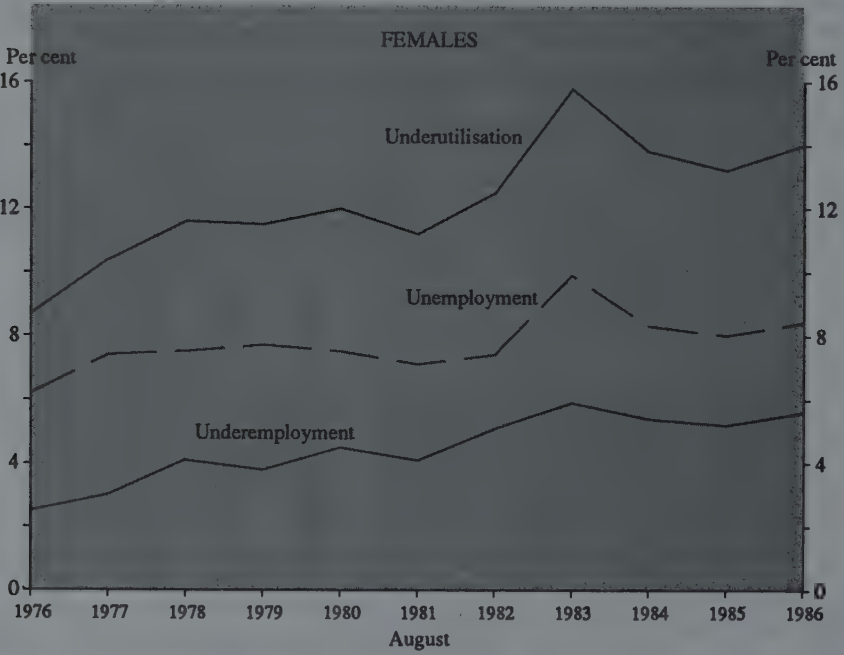
EMPLOYED PERSONS: EMPLOYMENT/POPULATION RATIOS (*a*)
(per cent)

	Age group (years)								
August	*15–19*	*20–24*	*25–34*	*35–44*	*45–54*	*55–59*	*60–64*	*65 and over*	*Total*
				MALES					
1982	52.3	79.3	89.7	91.7	86.7	76.6	45.5	9.1	71.7
1983	44.9	74.1	86.8	89.3	85.0	73.0	39.8	8.3	68.3
1984	46.0	76.6	87.8	89.9	85.0	72.6	39.9	8.8	69.1
1985	46.6	78.5	87.7	90.6	85.6	71.1	39.3	8.6	69.3
1986	47.7	78.1	88.4	90.0	85.1	71.2	42.3	8.3	69.4
1987	47.2	78.2	88.0	89.9	85.8	70.3	41.6	8.4	69.2
				FEMALES					
1982	46.6	63.8	50.0	55.2	47.7	25.0	9.6	2.5	40.7
1983	44.4	62.7	47.8	54.1	46.2	27.3	11.9	2.1	39.7
1984	44.7	64.3	51.1	55.4	47.8	26.6	11.4	2.5	40.9
1985	46.5	65.9	53.3	58.2	48.0	26.2	11.1	1.9	42.0
1986	45.6	67.1	55.5	60.8	52.0	27.5	12.5	1.9	43.6
1987	43.2	67.6	57.2	61.8	52.8	29.6	13.1	2.6	44.3
				PERSONS					
1982	49.5	71.6	69.8	73.8	67.6	50.8	26.8	5.3	56.0
1983	44.6	68.4	67.3	71.9	66.0	50.3	25.3	4.7	53.8
1984	45.4	70.5	69.5	72.9	66.8	49.8	25.2	5.2	54.8
1985	46.6	72.2	70.6	74.6	67.2	48.9	24.8	4.8	55.5
1986	46.6	72.7	72.0	75.6	68.9	49.5	27.1	4.6	56.3
1987	45.2	72.9	72.6	76.0	69.6	50.1	27.1	5.0	56.6

(*a*) Employment/population ratio for any group is the number of employed persons expressed as a percentage of the civilian population aged 15 and over in the same group.

UNDERUTILISATION, UNDEREMPLOYMENT AND UNEMPLOYMENT RATES





Indicates break in series. Estimates for August 1986 are based on a revised definition introduced in April 1986.
Source: Employment, Underemployment Australia, 1966-1983 (6246.0). The Labour Force, Australia (6203.0).

The table below presents the status of worker for employed persons. Employers, self-employed persons and wage and salary earners are those who, during the survey week, worked for one hour or more for pay, profit, commission or payment in kind in a job or a business, or on a farm. From April 1986, unpaid family helpers are those who, during the survey week, worked for one hour or more without pay in a family business or on a farm. Prior to April 1986, when a new definition was introduced, unpaid family helpers were those who worked for 15 hours or more without pay in a family business or on a farm.

EMPLOYED PERSONS: STATUS OF WORKER
('000)

August	*Employers*	*Self-employed*	*Wage and salary earners*	*Unpaid family helpers*	*Total*
1982	353.2	647.0	5,354.3	24.9	6,379.3
1983	321.0	653.1	5,242.5	24.5	6,241.1
1984	335.4	681.8	5,423.8	21.2	6,462.3
1985	349.7	709.7	5,559.1	27.6	6,646.1
1986	343.4	745.5	5,730.8	66.0	6,885.7
1987	362.3	729.6	5,921.8	59.4	7,073.2

A measure of the relative importance of an industry is the size of its workforce. Also of interest is the work effort of that workforce as measured by hours worked. Taken together, employment and hours worked by industry serve as an indicator of labour supplied to that industry. The following table shows the distribution of employed persons by industry and average hours worked.

EMPLOYED PERSONS BY INDUSTRY AND AVERAGE WEEKLY HOURS WORKED AUGUST 1987

Industry	*Number ('000)*			*Average weekly hours worked*		
	Males	*Females*	*Persons*	*Males*	*Females*	*Persons*
Agriculture, forestry, fishing and hunting	296.3	107.7	404.0	48.2	29.2	43.1
Mining	89.8	9.6	99.4	38.6	33.4	38.1
Manufacturing	847.8	303.6	1,151.4	39.3	33.1	37.7
Food beverages and tobacco	132.1	55.2	187.3	38.4	30.1	36.0
Metal products	167.1	24.7	191.8	39.7	33.2	38.8
Other manufacturing	548.6	223.7	772.3	39.5	33.9	37.8
Electricity, gas and water	106.0	13.6	119.6	35.5	33.2	35.3
Construction	425.9	59.8	485.7	39.2	20.1	36.8
Wholesale and retail trade	793.3	614.7	1,408.0	40.9	27.7	35.1
Transport and storage	306.7	66.9	373.6	39.6	29.3	37.7
Communication	103.5	35.2	138.7	34.5	28.3	32.9
Finance, property and business services	407.2	359.5	766.7	40.5	30.6	35.8
Public administration and defence	221.9	129.0	350.9	35.6	30.6	33.7
Community services	450.0	830.3	1,280.3	38.5	29.1	32.4
Recreation, personal and other services	213.9	281.0	494.9	39.2	27.4	32.5
Total	**4,262.3**	**2,810.8**	**7,073.2**	**39.8**	**29.2**	**36.0**

The following table sets out the distribution of employed persons across occupations.

EMPLOYED PERSONS BY OCCUPATION, AUGUST 1987
('000)

Occupation (a)	Males	Married females	All females	Persons
Managers and administrators	606.7	153.8	186.3	793.0
Professionals	530.5	209.6	341.1	871.6
Para-professionals	248.9	113.9	191.8	440.7
Tradespersons	1,019.4	60.5	106.3	1,125.7
Clerks	308.8	554.9	905.5	1,214.3
Salespersons and personnel service workers	365.2	303.9	616.7	981.9
Plant and machine operators, and drivers	466.9	67.5	92.4	559.3
Labourers and related workers	715.9	253.2	370.8	1,086.7
Total	**4,262.3**	**1,717.3**	**2,810.8**	**7,073.2**

(*a*) Classified according to the *Australian Standard Classification of Occupations* (ASCO), 1986.

Full-time workers are those who usually work 35 hours or more a week or who worked 35 hours or more during the survey week. Part-time workers are those who usually work less than 35 hours a week and who did so during the survey week. Estimates of these workers by sex and age are shown in the following table.

EMPLOYED PERSONS: FULL-TIME AND PART-TIME WORKERS BY AGE AUGUST 1987

('000)

	Age group (years)								
	15–19	*20–24*	*25–34*	*35–44*	*45–54*	*55–59*	*60–64*	*65 and over*	*Total*
MALES									
Full-time workers	229.1	472.0	1,118.5	1,036.1	677.7	248.0	125.9	39.9	3,947.0
Part-time workers	102.1	45.5	44.1	34.6	30.7	17.0	19.9	21.4	315.3
Total	**331.3**	**517.4**	**1,162.6**	**1,070.7**	**708.4**	**265.0**	**145.8**	**61.2**	**4,262.3**
FEMALES									
Full-time workers	165.7	350.5	478.1	388.5	230.3	60.8	24.5	10.8	1,709.2
Part-time workers	127.7	89.1	278.9	331.2	188.2	48.3	23.2	15.1	1,101.6
Total	**293.4**	**439.6**	**757.0**	**719.6**	**418.5**	**109.2**	**47.7**	**25.9**	**2,810.8**

Estimates of employed wage and salary earners by sector are contained in the following tables. The estimates shown are derived from the quarterly Survey of Employment and Earnings.

EMPLOYED WAGE AND SALARY EARNERS: SECTOR BY STATES AND TERRITORIES JUNE 1987

('000)

Sector	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Private	1,410.7	1,139.2	563.1	324.1	366.7	100.5	34.8	49.6	3,988.6
Public	581.1	457.5	259.1	156.1	158.6	53.7	22.0	73.1	1,761.3
Commonwealth	140.3	99.6	51.1	36.2	27.2	10.1	5.3	72.6	442.5
State	377.5	314.2	181.3	111.7	121.1	40.1	(a)15.9	0.5	1,162.2
Local	63.3	43.7	26.7	8.3	10.3	3.5	0.8	..	156.6
Total	**1,991.7**	**1,596.7**	**822.2**	**480.2**	**525.3**	**154.2**	**56.8**	**122.7**	**5,749.9**

(a) Northern Territory Government.

EMPLOYED WAGE AND SALARY EARNERS: INDUSTRY BY SECTOR

('000)

	Private sector				*Public sector*			
Industry	*Sept. 1986*	*Dec. 1986*	*Mar. 1987*	*June 1987*	*Sept. 1986*	*Dec. 1986*	*Mar. 1987*	*June 1987*
Agriculture, forestry, fishing and hunting (a)	..	..	..	..	8.4	8.2	8.2	8.6
Mining	79.9	76.2	77.0	76.9	7.3	7.7	7.8	7.1
Manufacturing	986.3	1,003.8	1,001.0	1,010.8	51.9	50.4	50.8	49.6
Electricity, gas and water	6.2	6.0	6.1	5.5	131.1	130.3	129.9	128.1
Construction	206.7	210.1	216.1	213.7	48.6	46.1	45.9	45.1
Wholesale and retail trade	1,086.8	1,134.9	1,129.6	1,133.0	5.2	5.4	5.2	5.2
Transport and storage	147.6	142.0	142.9	143.4	150.9	149.1	148.2	146.5
Communication	1.0	1.0	1.0	—	134.5	134.7	135.3	136.7
Finance, property and business services	546.4	560.4	560.1	585.0	104.5	103.7	104.7	106.6
Public administration and defence (b)	—	—	—	—	309.8	310.7	312.8	315.8
Community services—	421.0	422.4	424.3	439.5	772.6	777.2	739.7	779.3
Health	207.5	207.1	209.6	217.3	279.5	278.6	276.7	282.5
Education	89.8	89.6	86.7	91.6	379.6	380.6	344.3	378.2
Other	123.7	125.7	128.0	131.5	113.6	118.0	118.7	118.6
Recreation, personal and other services	369.6	368.6	383.0	394.3	25.2	24.6	24.9	25.2
Total all industries	**3,850.9**	**3,925.1**	**3,940.5**	**4,002.7**	**1,750.0**	**1,748.2**	**1,713.2**	**1,753.7**

(a) Out of scope of survey for private sector. (b) Excludes members of permanent defence forces and employees of overseas embassies, consulates etc.

A table on sector and industry of apprentices and the year of their apprenticeship follows. The data were derived from the Transition from Education to Work Supplementary Survey conducted in May 1987.

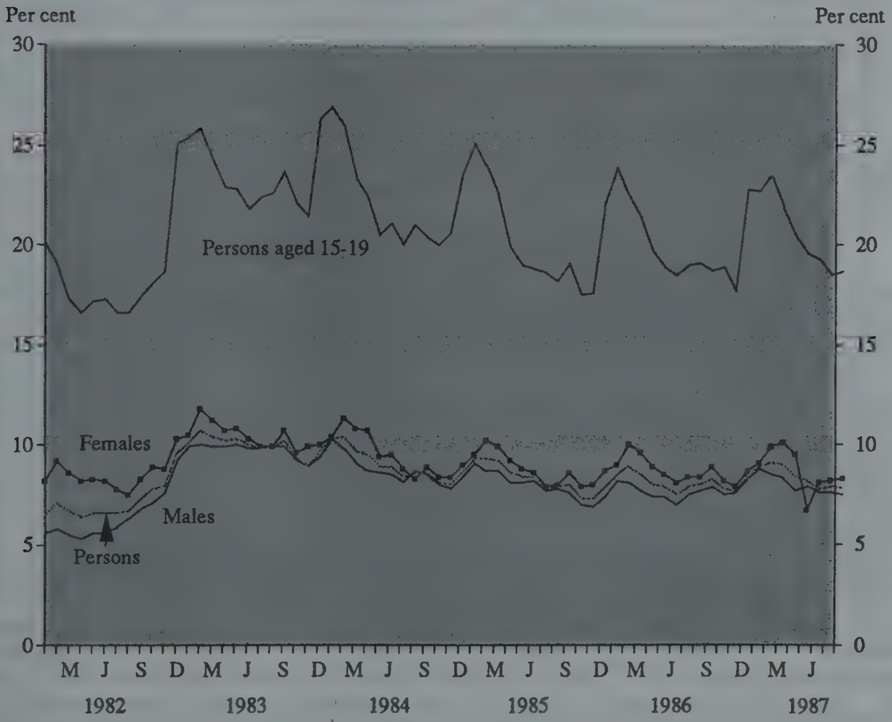
APPRENTICES: SECTOR AND INDUSTRY, MAY 1987
('000)

	Year of apprenticeship				
	First	*Second*	*Third*	*Fourth(a)*	*Total*
Sector—					
Government	5.1	4.5	4.9	3.8	18.2
Private(*b*)	33.9	35.7	28.4	23.5	121.5
Industry—					
Manufacturing	9.2	12.0	9.8	7.3	38.3
Electricity, gas and water	*	*	*	*	4.2
Construction	6.2	8.3	8.0	5.2	27.7
Wholesale and retail trade	10.2	7.8	7.0	5.6	30.5
Transport and storage; communication	*	*	*	*	4.0
Community services	*	*	*	*	4.7
Recreation, personal and other services	7.0	6.0	*	3.6	19.1
Other(*c*)	*	*	*	*	11.1
Total	**39.0**	**40.2**	**33.3**	**27.2**	**139.7**

(*a*) Includes a small number of fifth year apprentices. (*b*) Includes a small number of persons for whom sector could not be determined. (*c*) Includes agriculture, etc; mining; finance, property and business services; and public administration and defence.

Unemployment

UNEMPLOYMENT RATES
(THE UNEMPLOYMENT IN EACH GROUP AS A PERCENTAGE OF CIVILIAN LABOUR FORCE IN THE SAME GROUP)



The unemployment statistics presented in this section have been derived from the ABS monthly Labour Force Survey and its supplementaries.

Broadly, a person is considered to be unemployed if he or she satisfies three criteria—not employed, available for work, and taking active steps to find work. The most important characteristics presented include their demographic composition, the duration of unemployment and their educational qualifications. Also shown are some summary statistics on job vacancies.

Measures of unemployment provide one indicator of the underutilisation of labour. The two most important measures are the number of persons unemployed and the unemployment rate. The unemployment rate is defined as the number of unemployed expressed as a percentage of the size of the labour force.

By examining particular groups and characteristics of the unemployed, various economic and social aspects of unemployment can be analysed. While the aggregate unemployment rates shown above are important overall indicators, full-time and part-time unemployment levels and rates for different age groups by sex and marital status are also important. This information is set out in the table below, along with whether those aged 15–24 are looking for their first job.

UNEMPLOYED PERSONS: AGE AND WHETHER LOOKING FOR FULL-TIME OR PART-TIME WORK, AUGUST 1987

	Number unemployed ('000)				*Unemployment rate (per cent)*			
Age	*Males*	*Married females*	*All females*	*Persons*	*Males*	*Married females*	*All females*	*Persons*
LOOKING FOR FULL-TIME WORK								
Total	**317.3**	**62.5**	**178.1**	**495.4**	**7.4**	**6.4**	**9.4**	**8.1**
Aged 15–19	*56.1*	*	*50.5*	*106.6*	*19.7*	*	*23.3*	*21.3*
Looking for first job	17.9	*	18.7	36.5	. .	. .	. .	. .
Attending school	5.3	*	*	8.7	n.a.	n.a.	n.a.	n.a.
Attending a tertiary education institution full time	*	*	*	4.2	*	*	*	64.9
Aged 20 and over	*261.2*	*60.3*	*127.6*	*388.8*	*6.6*	*6.2*	*7.6*	*6.9*
20–24	69.6	10.9	41.9	111.5	12.9	9.7	10.7	11.9
Looking for first job	*	*	*	6.8	. .	. .	. .	. .
25–34	84.1	18.6	37.9	122.0	7.0	6.3	7.3	7.1
35–44	52.1	19.3	30.9	83.0	4.8	6.3	7.4	5.5
45–54	30.4	10.2	15.2	45.6	4.3	5.5	6.2	4.8
55 and over	24.9	*	*	26.7	5.7	*	*	5.0
Aged 15–64	*317.1*	*62.4*	*177.9*	*495.0*	*7.5*	*6.5*	*9.5*	*8.1*
LOOKING FOR PART-TIME WORK								
Total	**29.7**	**40.5**	**76.9**	**106.5**	**8.6**	**4.8**	**6.5**	**7.0**
Aged 15–19	*16.9*	*	*20.1*	*37.0*	*14.2*	*	*13.6*	*13.9*
Attending school	13.3	*	13.1	26.5	16.9	*	14.9	15.8
Attending a tertiary educational institution full time	*	*	4.6	7.6	*	*	17.2	16.6
Aged 20 and over	*12.8*	*40.0*	*56.8*	*69.6*	*5.7*	*4.7*	*5.5*	*5.5*
20–24	5.1	4.3	9.9	15.0	10.1	11.5	10.0	10.1
Attending a tertiary educational institution full time	3.6	*	*	5.9	16.2	*	*	12.8
25–34	*	17.5	23.6	26.4	*	6.9	7.8	7.5
35–44	*	13.2	16.2	17.5	*	4.2	4.7	4.6
45 and over	3.6	5.0	7.1	10.6	3.9	2.1	2.5	2.8
Aged 15–64	*29.2*	*40.3*	*76.4*	*105.6*	*9.0*	*4.8*	*6.6*	*7.1*

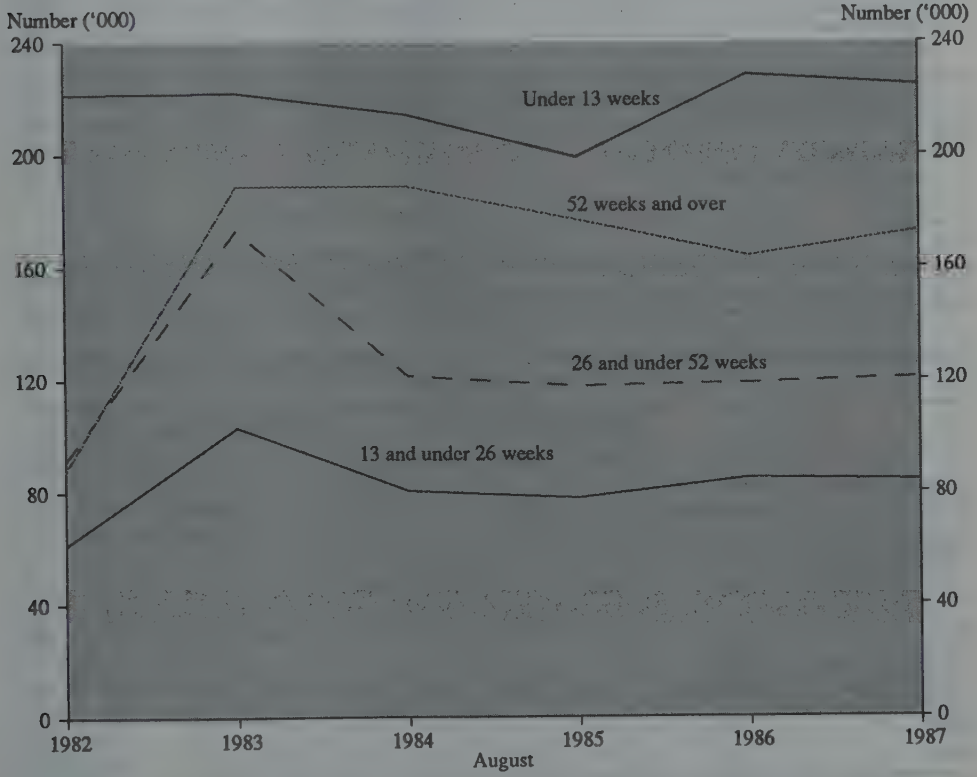
An important indicator of the severity of unemployment is the length of time a person is unemployed. Two views are presented—the chart depicts the increase in each duration of unemployment category from 1982 to 1987 while the table shows more detail as at August 1987. Note that in each case, only current and continuing periods of unemployment are shown rather than completed spells. This is because, in the monthly Labour Force Survey, duration of unemployment is the period from the time a person began looking for work or was laid off to the end of the survey week and only applies if the person is still unemployed.

UNEMPLOYED PERSONS: DURATION OF UNEMPLOYMENT AND AGE, AUGUST 1987

Duration of unemployment (weeks)	Age group (years)				Total(a)	Married	Not married	Looking for	
	15–19	20–24	25–34	34–54				Full-time work	Part-time work
			—'000—						
Under 2	10.3	10.0	11.5	9.1	41.7	15.2	26.4	23.8	17.9
2 and under 4	14.7	12.1	17.1	14.0	59.3	24.5	34.8	39.8	19.5
4 and under 8	18.3	13.4	19.0	14.4	67.4	27.0	40.4	52.3	15.2
8 and under 13	14.0	12.5	13.8	14.7	56.3	22.5	33.8	44.8	11.5
13 and under 26	21.2	21.9	17.4	20.4	84.1	28.4	55.7	72.0	12.1
26 and under 39	32.3	19.5	21.0	18.4	95.0	28.7	66.3	79.9	15.1
39 and under 52	6.2	5.3	7.4	5.1	25.5	8.3	17.2	24.1	1.4
52 and under 65	8.3	6.9	10.9	10.9	39.6	17.7	21.9	34.0	5.6
65 and under 104	7.5	7.4	10.3	9.9	36.7	14.3	22.5	34.2	2.5
104 and over	10.7	17.6	19.9	34.8	96.3	46.9	49.4	90.6	5.7
Total	**143.6**	**126.5**	**148.4**	**151.7**	**601.9**	**233.5**	**368.4**	**495.4**	**106.5**
			—weeks—						
Average duration—									
Mean	*32.5*	*41.9*	*45.7*	*62.2*	*48.6*	*55.4*	*44.2*	*54.0*	*23.3*
Median	*20*	*19*	*20*	*26*	*23*	*24*	*22*	*26*	*8*

(*a*) Includes persons aged 55 and over, details for whom are not shown separately.

UNEMPLOYED PERSONS: DURATION OF UNEMPLOYMENT



Also of interest is the industry and occupation of their last full-time job. These estimates are set out in the table which follows.

UNEMPLOYED PERSONS: INDUSTRY AND OCCUPATION OF LAST FULL-TIME JOB AUGUST 1987

	Total ('000)			*Unemployment rate (per cent)*		
	Males	*Females*	*Persons*	*Males*	*Females*	*Persons*
Had worked full time for two weeks or more in the last two years	*209.9*	*110.7*	*320.6*	*4.7*	*3.8*	*4.3*
Industry—						
Agriculture, forestry, fishing and hunting	15.9	*	17.7	5.1	*	4.2
Agriculture and services to agriculture	13.3	*	14.7	4.6	*	3.8
Manufacturing	54.3	16.5	70.9	6.0	5.2	5.8
Food, beverages and tobacco	9.5	4.2	13.7	6.7	7.0	6.8
Metal products	10.5	*	11.1	5.9	*	5.5
Other manufacturing	34.3	11.8	46.1	5.9	5.0	5.6
Construction	32.2	*	34.0	7.0	*	6.6
Wholesale and retail trade	45.9	36.1	82.0	5.5	5.6	5.5
Wholesale trade	13.3	5.4	18.7	4.2	4.0	4.2
Retail trade	32.6	30.8	63.3	6.2	5.9	6.1
Transport and storage	9.5	*	11.1	3.0	*	2.9
Finance, property and business services	8.8	11.6	20.4	2.1	3.1	2.6
Public administration and defence	9.9	5.2	15.2	4.3	3.9	4.1
Community services	10.4	18.8	29.2	2.3	2.2	2.2
Recreation, personal and other services	15.7	15.8	31.5	6.9	5.3	6.0
Other industries	7.1	*	8.6	2.3	*	2.3
Occupation major group (*a*)						
Managers and administrators	11.2	3.6	14.9	1.8	1.9	1.8
Professionals	7.1	5.4	12.5	1.3	1.6	1.4
Para-professionals	5.2	3.9	9.1	2.0	2.0	2.0
Tradespersons	46.6	4.8	51.4	4.4	4.3	4.4
Clerks	9.6	27.1	36.7	3.0	2.9	2.9
Salespersons and personal service workers	18.3	38.4	56.7	4.8	5.9	5.5
Plant and machine operators, and drivers	24.7	6.3	31.0	5.0	6.4	5.3
Labourers and related workers	87.2	21.1	108.3	10.9	5.4	9.1
Other (b)	*134.0*	*135.9*	*269.9*	..	..	..
Looking for first job	34.1	39.4	73.5	..	..	..
Looking for full-time work	24.0	26.5	50.6	..	..	..
Other	99.9	96.5	196.5	..	..	..
Stood down	*3.1*	*8.3*	*11.4*	..	..	..
Total	**347.0**	**254.9**	**601.9**	**7.5**	**8.3**	**7.8**

(*a*) Classified according to the *Australian Standard Classification of Occupations* (ASCO), 1986. (*b*) Had never worked for two weeks or more in a full-time job or had not done so in the last two years; industry and occupation were not obtained for these persons.

UNEMPLOYED PERSONS: ACTIVE STEPS TAKEN TO FIND FULL-TIME OR PART-TIME WORK, JUNE 1986

	Looking for full-time work				*Looking for part-time work*			
	Males	*Females*	*Persons*		*Males*	*Females*	*Persons*	
Active steps taken to find work during current period of unemployment	*—'000—*			*(per cent)*	*—'000—*			*(per cent)*
Registered with the CES and—								
Took no other active steps	4.5	*	7.2	1.6	*	*	*	*
Contacted prospective employers	243.1	114.6	357.6	79.3	8.9	18.8	27.7	28.8
Took other active steps	23.3	10.6	34.0	7.5	*	*	3.8	3.9
Total	*270.9*	*127.9*	*398.8*	*88.4*	*10.6*	*22.0*	*32.7*	*34.0*
Not registered with the CES and—								
Contacted prospective employers	17.6	30.6	48.1	10.7	13.3	44.1	57.3	59.5
Took other active steps	*	*	4.2	0.9	*	4.3	6.3	6.5
Total	*19.1*	*33.2*	*52.4*	*11.6*	*15.3*	*48.4*	*63.6*	*66.0*
Total	**290.0**	**161.1**	**451.2**	**100.0**	**25.9**	**70.4**	**96.3**	**100.0**

The number of unemployed persons shown above will differ from the number of unemployed persons shown in *The Labour Force, Australia* (6203.0). This is because the latter includes persons who are waiting to be called back to a full-time or part-time job from which they had been stood down without pay for less than four weeks up to the end of the survey week (including the whole of the survey week) for reasons other than bad weather or plant breakdown. Active steps taken to find work (also shown above) comprise writing, telephoning or applying in person to an employer for work; answering a newspaper advertisement for a job; checking factory or Commonwealth Employment Service (CES) noticeboards; being registered with the CES; checking or registering with any other employment agency; advertising or tendering for work; and contacting friends or relatives.

Job vacancies

Job vacancy statistics taken together with unemployment statistics assist in the assessment of the demand for labour. However, unemployment and job vacancy statistics should be regarded as complementary indicators. This is because the monthly Labour Force Survey (which collects unemployment) and a quarterly survey of employers (which collects job vacancies) utilise different collection methodologies, sample designs, definitions and concepts.

A job vacancy is a job available for immediate filling on the survey date and for which recruitment action had been taken by the employer. Recruitment action includes efforts to fill vacancies by advertising, by factory notices, by notifying public or private employment agencies or trade unions and by contacting, interviewing or selecting applicants already registered with the enterprise or organisation. Excluded are jobs available only to existing employees of the organisation; vacancies of less than one day's duration; vacancies to be filled by persons already hired or by promotion or transfer of existing employees; vacancies to be filled by employees returning from paid or unpaid leave or after industrial dispute(s); vacancies not available for immediate filling on the survey date; vacancies not available within the particular State or Territory to which the survey return relates; vacancies for work carried out under contract; vacancies for which no effort is being made to fill the position and vacancies which are available only to persons employed by government departments or authorities.

Statistics on job vacancies are produced from a survey conducted each quarter. Estimates prior to November 1983 are not strictly comparable to later estimates. Background information about the job vacancies series is provided in *Information Paper: New Statistical Series: Employment, Average Weekly Earnings, Job Vacancies and Overtime* (6256.0) issued on 21 June 1984.

JOB VACANCIES: STATES AND TERRITORIES
('000)

Month	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
1982 May	9.0	7.6	3.9	1.2	2.2	0.4	0.2	0.8	25.3
1983 May	6.9	5.3	1.7	1.0	*	0.3	0.3	0.6	17.5
November—old (*a*) . .	7.8	4.5	2.0	1.3	1.4	0.7	0.3	0.9	19.1
—new (*b*) .	11.2	6.5	4.1	2.1	3.5	0.8	0.5	1.3	30.1
1984 May	14.7	8.9	4.0	2.5	2.0	0.6	0.6	1.5	34.8
1985 May	22.3	16.8	4.7	3.6	4.3	1.2	1.1	2.5	56.6
1986 May	21.1	16.8	4.6	2.6	4.1	1.3	1.1	2.7	54.4
1987 May	19.9	17.6	4.0	3.5	5.5	1.0	0.7	1.6	53.8

(*a*) Results from payroll tax based surveys. (*b*) Result of sample surveys of employers.

JOB VACANCY RATES(*a*): STATES AND TERRITORIES
(per cent)

Month	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
1982 May	0.6	0.7	0.7	0.3	0.6	0.4	0.7	1.0	0.6
1983 May	0.5	0.5	0.3	0.3	0.4	0.3	0.9	0.8	0.5
November—old(*b*) . .	0.6	0.4	0.4	0.3	0.4	0.6	1.0	1.2	0.5
—new(*c*) . .	0.7	0.5	0.5	0.5	*	0.7	*	1.3	0.6
1984 May	0.8	0.7	0.5	0.6	*	*	1.1	1.4	0.7
1985 May	1.2	1.2	0.6	0.8	1.0	0.9	2.3	2.3	1.1
1986 May	1.1	1.1	0.6	0.5	0.9	0.9	2.0	2.0	1.0
1987 May	1.1	1.2	0.5	0.7	1.1	0.7	1.5	1.3	1.1

(*a*) Job vacancy rate is calculated by expressing the number of job vacancies as a percentage of the number of employees plus vacancies. (*b*) Results from payroll tax based surveys. (*c*) Result of sample surveys of employers.

Persons not in the labour force

Persons not in the labour force represent that group of the population who, during a particular week, are not employed or unemployed. Interest in this group centres primarily around their potential to participate in the labour force.

In this section, data come from the supplementary survey of persons not in the labour force. Attention is given to demographic characteristics as well as focussing on degree of attachment to the labour force. Aspects such as whether they want a job, or whether they are discouraged jobseekers are emphasised.

CIVILIAN POPULATION AGED 15 AND OVER: LABOUR FORCE STATUS
('000)

	Sept. 1984	*March 1985*	*Sept. 1985*	*March 1986*	*Sept. 1986*	*March 1987*
Civilian population aged 15 and over	11,808.0	11,897.3	11,998.5	12,121.7	12,249.5	12,394.7
Employed	6,572.9	6,634.5	6,783.9	6,926.3	7,007.6	7,109.1
Unemployed	621.3	671.7	587.7	640.4	631.6	702.5
Persons not in the labour force	4,613.8	4,591.1	4,626.9	4,555.1	4,610.3	4,583.1
With marginal attachment to the labour force	726.3	708.3	739.7	707.3	749.4	709.8
Wanted to work and were actively looking for work	56.4	32.1	60.4	35.2	57.2	31.1
Were available to start work within four weeks	26.2	22.2	30.2	25.0	26.9	23.6
Were not available to start work within four weeks	30.2	9.9	30.2	10.2	30.3	7.6
Wanted to work but were not actively looking for work and were available to start work within four weeks	669.9	676.3	679.4	672.1	692.1	678.7
Discouraged jobseekers	93.7	96.0	89.0	96.8	90.5	100.2
Other	576.2	580.3	590.4	575.3	601.6	578.5
Without marginal attachment to the labour force	3,887.6	3,882.8	3,887.1	3,847.8	3,860.9	3,873.3
Wanted to work but were not actively looking for work and were not available to start work within four weeks	264.1	222.7	265.2	261.4	262.7	235.5
Did not want to work	3,365.6	3,399.1	3,380.1	3,340.8	3,345.3	3,368.8
Permanently unable to work	56.5	54.4	47.8	51.1	57.2	46.8
Institutionalised(*a*) and boarding school pupils	201.4	206.6	194.1	194.4	195.8	222.1

(*a*) Includes some patients in hospitals and sanatoriums and inmates of reformatories, gaols, etc.

Persons with marginal attachment to the labour force are those who were not in the labour force in the survey week and wanted to work and were available to start work within four weeks; or were actively looking for work but were not available to start work within four weeks. Discouraged jobseekers, a sub-category of those with marginal attachment, are those persons who wanted to work and were available to start work within four weeks but whose main reason for not taking active steps to find work was that they believed they would not be able to find a job for any of the following reasons:

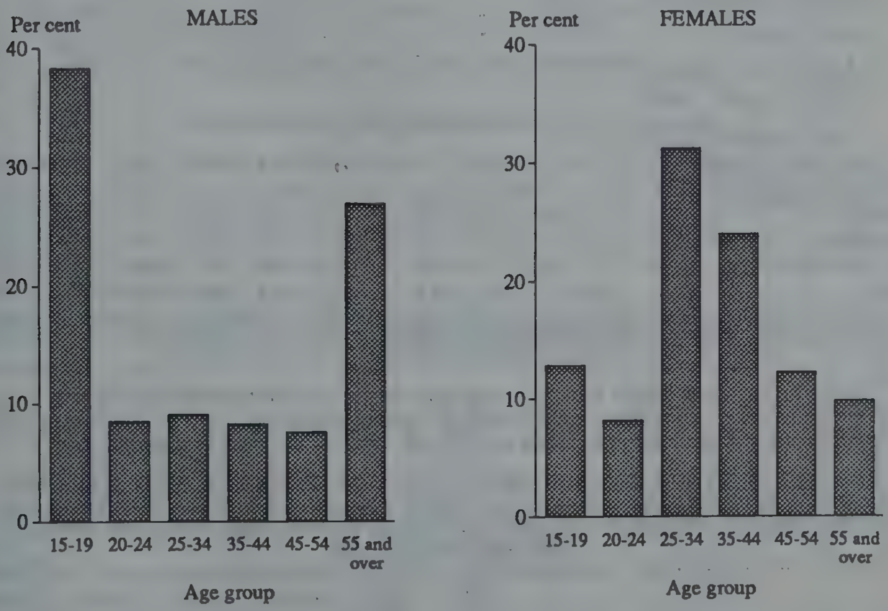
- considered by employers to be too young or too old;
- difficulties with language or ethnic background;
- lacked the necessary schooling, training, skills or experience;
- no jobs in their locality or line of work, or no jobs at all.

The following table gives an age and sex breakdown for persons with marginal attachment. Females account for 75.7 per cent of the marginally attached. While the age distribution of females with marginal attachment closely approximates that of females in the labour force, teenage males (15 to 19) are over-represented among males with marginal attachment to the labour force, accounting for 38.5 per cent of that group.

PERSONS NOT IN THE LABOUR FORCE WITH MARGINAL ATTACHMENT TO THE LABOUR FORCE: AGE, MARCH 1987
('000)

	Persons who wanted to work and were actively looking for work			*Persons who wanted to work but were not actively looking for work and were available to start work within four weeks*			*Persons with marginal attachment to the labour force*		
Age group (years)	*Were available to start work within four weeks*	*Were not available to start work within four weeks*	*Total*	*Discouraged job-seekers*	*Other*	*Total*	*Males*	*Females*	*Persons*
15–19	4.9	*	7.3	6.7	123.0	129.7	66.5	70.5	137.0
20–24	*	*	4.3	*	52.9	56.1	15.0	45.3	60.4
25–34	7.7	*	8.7	11.7	164.8	176.5	16.1	169.1	185.3
35–44	4.5	*	6.6	21.8	117.2	139.0	14.7	130.8	145.5
45–54	*	*	*	18.6	60.3	78.9	13.4	67.0	80.4
55–59	*	*	*	11.3	24.9	36.1	10.7	27.0	37.7
60–64	*	*	*	11.9	16.5	28.4	16.4	13.2	29.6
65 and over	*	*	*	15.2	18.8	34.0	19.7	14.3	34.0
Total	**23.6**	**7.6**	**31.1**	**100.2**	**578.5**	**678.7**	**172.6**	**537.3**	**709.8**

PERSONS NOT IN THE LABOUR FORCE WITH MARGINAL ATTACHMENT TO THE LABOUR FORCE: AGE AND SEX, MARCH 1987



Details of the reason people ceased their last job are presented in the following table. The most frequent reasons persons with marginal attachment gave for ceasing their last job were 'pregnancy or to have children' (135,200) and retrenched (74,800).

PERSONS NOT IN THE LABOUR FORCE WITH MARGINAL ATTACHMENT TO THE LABOUR FORCE: REASON FOR CEASING LAST JOB, MARCH 1987 ('000)

	Persons who wanted to work and were actively looking for work			*Persons who wanted to work but were not actively looking for work and were available to start work within four weeks*			*Persons with marginal attachment to the labour force*		
Reason for ceasing last job	*Were available to start work within four weeks*	*Were not available to start work within four weeks*	*Total*	*Discouraged job-seekers*	*Other*	*Total*	*Males*	*Females*	*Persons*
Had had a job	20.6	6.2	26.7	92.3	483.2	575.5	127.4	474.8	602.2
Job loser	9.3	*	11.9	38.5	141.5	180.0	56.1	135.9	192.0
Retrenched	4.0	*	5.1	20.2	49.5	69.7	21.2	53.5	74.8
Job was temporary or seasonal and did not leave to return to studies	*	*	*	8.2	39.7	47.9	10.1	40.9	51.0
Own ill health or injury	*	*	*	7.4	47.4	54.8	21.9	36.2	58.1
Business closed down for economic reasons	*	*	*	*	5.0	7.6	*	5.3	8.1
Job leaver	11.2	*	14.8	53.8	329.2	383.0	67.8	330.0	397.8
Unsatisfactory work arrangements	*	*	*	6.2	25.7	31.9	10.3	24.6	34.8
Job was temporary or seasonal and left to return to studies	*	*	*	*	10.9	10.9	7.0	4.6	11.6
Retired/didn't want to work any longer	*	*	*	12.7	28.7	41.4	21.0	20.6	41.6
Returned to studies	*	*	*	*	20.6	21.7	14.7	8.3	23.0
To get married	*	*	*	5.3	31.4	36.7	*	37.7	37.7
Pregnancy/to have children	*	*	*	11.2	120.2	131.4	*	134.9	135.2
To look after family, house or someone else	*	*	*	5.1	32.1	37.3	*	36.5	38.2
To have holiday/to move house/spouse transferred	*	*	*	8.3	40.8	49.1	6.4	45.4	51.8
Business closed down for other reasons	*	*	*	*	8.2	9.3	*	6.6	10.0
Other	*	*	*	*	10.7	13.3	*	10.9	14.0
Not asked *(a)*	..	..	..	..	12.4	12.4	*	8.9	12.4
Had never had a job	*	*	4.4	7.9	94.4	102.2	45.0	61.7	106.7
Total *(b)*	**23.6**	**7.6**	**31.1**	**100.2**	**578.5**	**678.7**	**172.6**	**537.3**	**709.8**

(a) Persons who had a job but, up to the end of the survey week had been away from work without pay for four weeks or longer and had not been actively looking for work. *(b)* Excludes unpaid voluntary workers.

The following table shows that 31.5 per cent of the 678,700 persons not in the labour force who wanted to work but were not actively looking for work and were available to start work within four weeks, did not intend to look for work in the next twelve months.

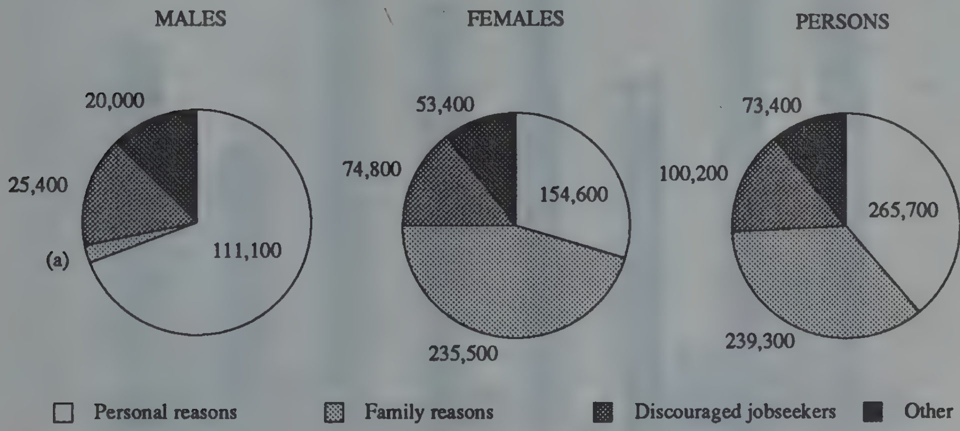
PERSONS NOT IN THE LABOUR FORCE WHO WANTED TO WORK BUT WERE NOT ACTIVELY LOOKING FOR WORK AND WERE AVAILABLE TO START WORK WITHIN FOUR WEEKS: INTENTION TO LOOK FOR WORK IN THE NEXT TWELVE MONTHS AND SEX, MARCH 1987

	Males	*Females*	*Persons*	*Males*	*Females*	*Persons*
		—'000—			*—per cent—*	
Intended to look	84.1	201.8	285.9	52.4	38.9	42.1
Might look	22.5	101.7	124.2	14.0	19.6	18.3
Did not intend to look	41.5	172.7	214.1	25.9	33.3	31.5
Did not know	4.0	27.0	31.0	2.5	5.2	4.6
Not asked (*a*)	8.5	15.1	23.5	5.3	2.9	3.5
Total	**160.4**	**518.2**	**678.7**	**100.0**	**100.0**	**100.0**

(*a*) Comprises persons who had a job to go to and persons who had a job but, up to the end of the survey week, had been away from work without pay for four weeks or longer and had not been actively looking for work.

The following chart depicts, for persons not in the labour force who wanted to work but were not actively looking for work and were available to start work within four weeks, their main reason for not actively looking for work. That is, whether they were not actively looking for work predominantly because of personal reasons, family reasons, or discouragement.

PERSONS NOT IN THE LABOUR FORCE WHO WANTED TO WORK BUT WERE NOT ACTIVELY LOOKING FOR WORK AND WERE AVAILABLE TO START WORK WITHIN FOUR WEEKS: MAIN REASON FOR NOT ACTIVELY LOOKING FOR WORK, MARCH 1987



(a) Estimate subject to sampling variability too high for most practical uses.

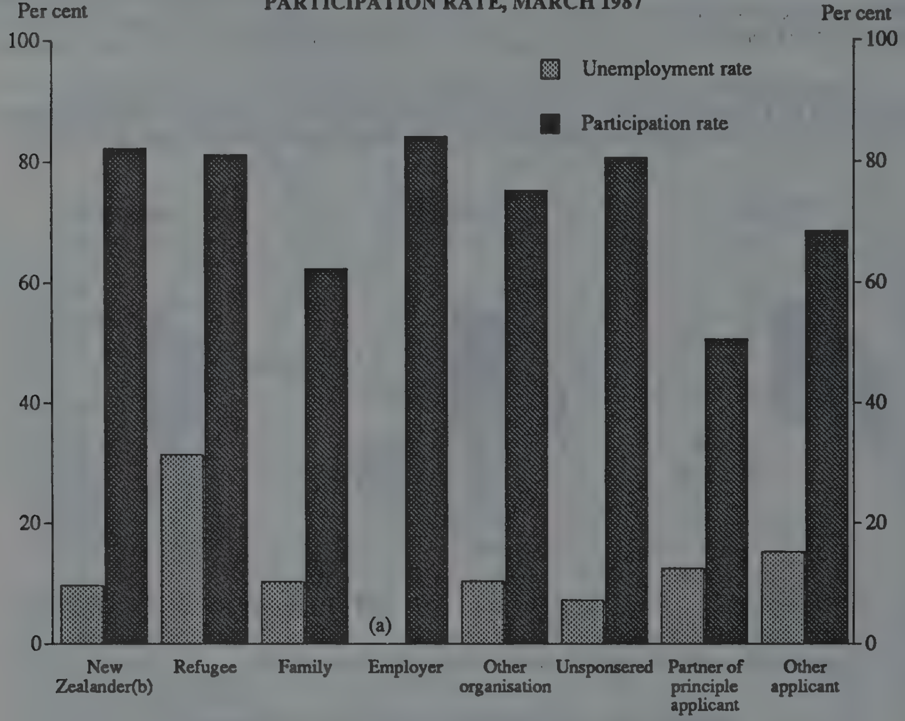
Labour force characteristics of migrants

Immigration is an important factor influencing present and future levels of labour market activity. Information on the labour force characteristics of migrants was obtained from the monthly Labour Force Survey. Also additional data were obtained from the March 1987 supplementary survey on labour force participation of various categories of migrants (e.g. sponsored by employer, refugee, etc.). Some summary data from the survey are shown in the following tables and charts.

MIGRANTS WHO ARRIVED IN AUSTRALIA AFTER 1960 AGED 18 AND OVER: LABOUR FORCE STATUS AND YEAR OF ARRIVAL, MARCH 1987

Year of arrival	*Employed*			*Unem-ployed*	*Labour force*	*Not in labour force*	*Total*	*Unemploy-ment rate*	*Partici-pation rate*
	Full-time	*Part-time*	*Total*						
			— *'000* —					— *per cent* —	
				MALES					
1961–1970	199.8	9.4	209.2	15.4	224.6	57.4	282.1	6.9	79.6
1971–1980	191.3	5.7	196.9	18.7	215.7	30.1	245.8	8.7	87.7
1981–1987	131.3	6.6	137.8	26.5	164.3	22.3	186.6	16.1	88.1
Total	**522.4**	**21.6**	**544.0**	**60.6**	**604.6**	**109.8**	**714.5**	**10.0**	**84.6**
				FEMALES					
1961–1970	70.0	49.3	119.3	8.5	127.9	134.4	262.3	6.7	48.8
1971–1980	89.7	43.9	133.6	14.6	148.2	105.5	253.7	9.8	58.4
1981–1987	66.5	22.5	88.9	26.0	115.0	85.7	200.6	22.6	57.3
Total	**226.2**	**115.7**	**341.9**	**49.1**	**391.0**	**325.6**	**716.6**	**12.6**	**54.6**

MIGRANTS WHO ARRIVED IN AUSTRALIA AFTER 1960 AGED 18 AND OVER: MIGRATION CATEGORY, UNEMPLOYMENT RATE AND PARTICIPATION RATE, MARCH 1987

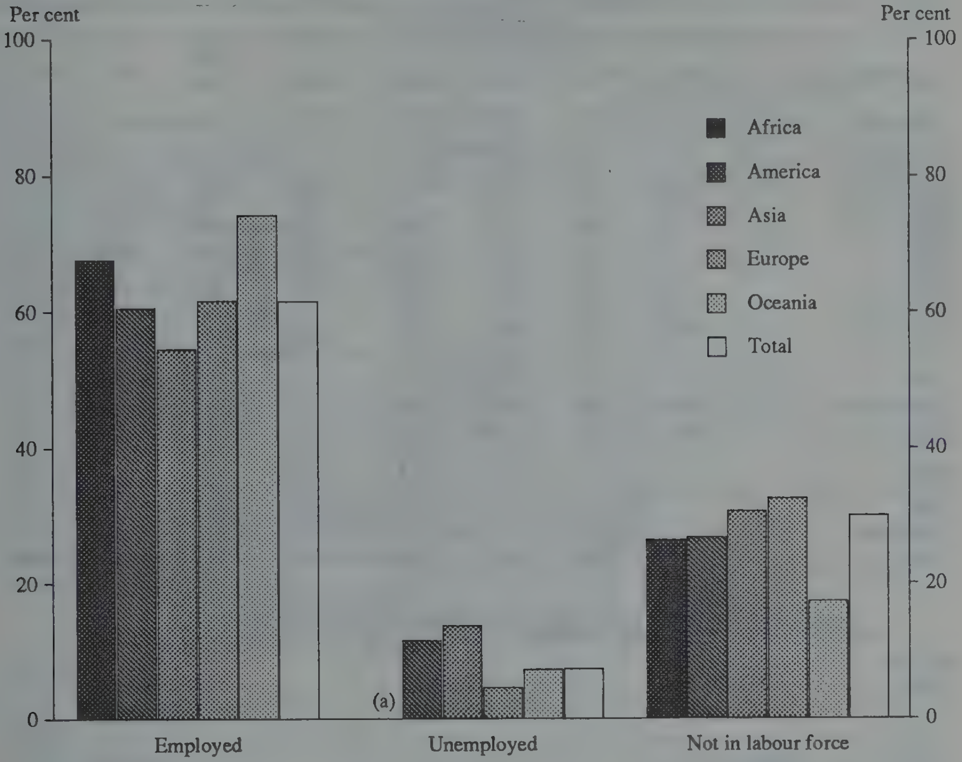


(a) Subject for sampling variabilty too high for most practical uses.
(b) Includes persons born in New Zealand and those whose place of last residence was New Zealand.

MIGRANTS WHO ARRIVED IN AUSTRALIA AFTER 1960 AGED 18 AND OVER: LABOUR FORCE STATUS AND AGE AT MARCH 1987

	Age at March 1987 (years)						
Labour force status	*18–24*	*25–34*	*35–44*	*45–54*	*55–64*	*65 and over*	*Total*
			MALES				
	—'000—						
Employed—	14.1	116.2	213.5	145.4	52.4	*	544.0
Full-time	12.9	111.4	205.9	141.3	49.3	*	522.4
Part-time	*	4.8	7.5	4.1	*	*	21.6
Unemployed	*	17.2	19.0	12.3	8.7	*	60.6
Labour force	17.2	133.4	232.4	157.7	61.1	*	604.6
Not in labour force	*	5.7	12.2	19.1	29.6	41.3	109.8
Total	**19.1**	**139.1**	**244.6**	**176.8**	**90.7**	**44.1**	**714.5**
	—per cent—						
Unemployment rate	*	12.9	8.2	7.8	14.2	*	10.0
			FEMALES				
	—'000—						
Employed—	19.2	82.9	136.1	79.7	21.8	*	341.9
Full-time	16.4	63.0	84.6	49.0	12.6	*	226.2
Part-time	*	19.9	51.6	30.7	9.2	*	115.7
Unemployed	5.4	14.7	16.9	9.5	*	*	49.1
Labour force	24.6	97.6	153.0	89.2	24.4	*	391.0
Not in labour force	6.5	55.1	74.7	69.1	60.0	60.3	325.6
Total	**31.1**	**152.7**	**227.6**	**158.2**	**84.4**	**62.6**	**716.6**
	—per cent—						
Unemployment rate	21.9	15.1	11.0	10.7	*	*	12.6

MIGRANTS WHO ARRIVED IN AUSTRALIA AFTER 1960 AGED 18 AND OVER: BIRTHPLACE AND LABOUR FORCE STATUS



(a) Estimate subject to sampling variability too high for most practical uses.

Retirement and retirement intentions

In the November 1986 supplementary survey to the Labour Force Survey, persons aged 45 and over were asked about their retirement, or their intentions to retire, from full-time work. The survey provides information on the flows and potential flows out of the labour force and on the provision being made by persons for their retirement. A summary of the results of the survey is shown in the following tables.

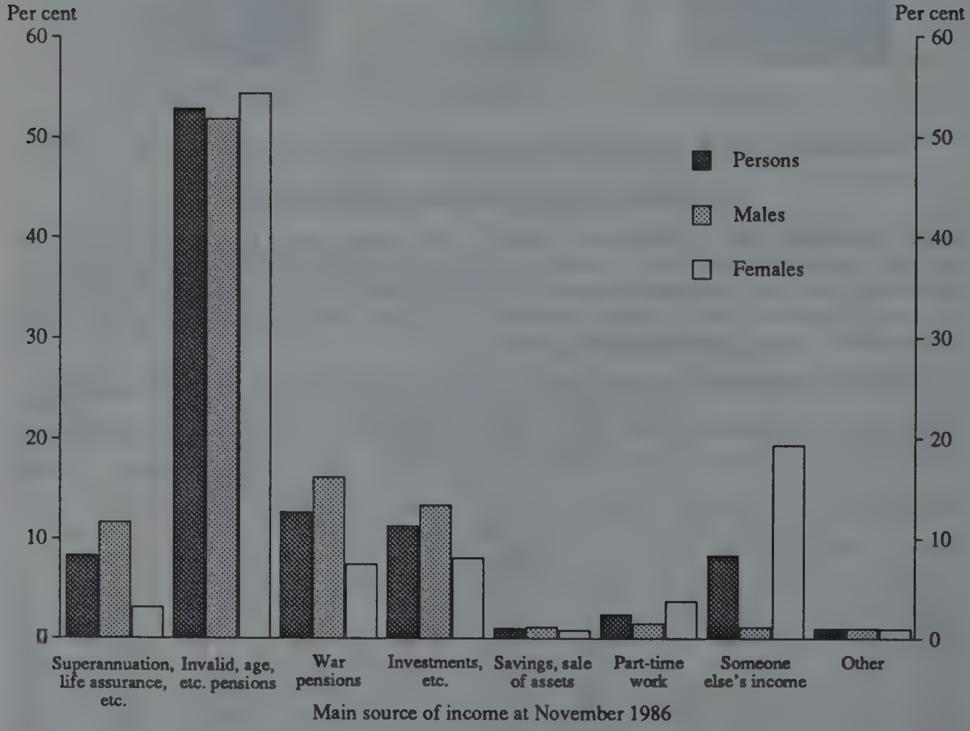
PERSONS WHO HAD RETIRED FROM FULL-TIME WORK: AGE AT RETIREMENT AND AGE AT NOVEMBER 1986

	Age at November 1986							
Age at retirement	*45–49*	*50–54*	*55–59*	*60–64*	*65–69*	*70 and over*	*Total*	*per cent*
			—'000—					
			MALES					
Less than 45	16.8	13.7	7.9	4.8	*	*	49.0	5.2
45–49	7.3	12.6	8.7	4.1	*	*	36.7	3.9
50–54	. .	12.2	25.3	22.1	6.7	6.7	73.0	7.8
55–59	. .	. .	33.7	71.1	36.2	20.0	160.9	17.2
60–64	. .	. .	. .	84.7	119.4	114.9	319.1	34.1
65–69	. .	. .	. .	. .	62.1	199.8	261.9	28.0
70 and over	. .	. .	. .	. .	. .	36.0	36.0	3.8
Total	*24.1*	*38.5*	*75.7*	*186.8*	*229.4*	*382.1*	*936.6*	*100.0*

PERSONS WHO HAD RETIRED FROM FULL-TIME WORK: AGE AT RETIREMENT AND AGE AT NOVEMBER 1986—*continued*

Age at retirement	*Age at November 1986*							
	45–49	*50–54*	*55–59*	*60–64*	*65–69*	*70 and over*	*Total*	*per cent*
	—'000—							
				FEMALES				
Less than 45	169.6	138.8	140.2	136.2	108.3	185.5	878.6	60.2
45–49	18.7	34.1	24.9	17.6	13.8	9.7	118.9	8.2
50–54	..	22.1	47.2	38.4	22.4	22.0	152.1	10.4
55–59	..	..	25.2	47.0	31.4	28.1	131.8	9.0
60–64	..	..	..	26.9	38.4	64.1	129.3	8.9
65–69	..	..	..	..	7.9	29.9	37.7	2.6
70 and over	..	..	..	..	..	9.9	9.9	0.7
Total	*188.3*	*195.1*	*237.5*	*266.1*	*222.2*	*349.2*	*1,458.4*	*100.0*
				PERSONS				
Less than 45	186.4	152.5	148.2	141.0	111.2	188.3	927.6	38.7
45–49	26.0	46.7	33.6	21.7	15.9	11.6	155.6	6.5
50–54	..	34.3	72.5	60.5	29.1	28.7	225.1	9.4
55–59	..	..	58.9	118.1	67.6	48.1	292.8	12.2
60–64	..	..	..	111.6	157.8	179.0	448.4	18.7
65–69	..	..	..	..	70.0	229.6	299.6	12.5
70 and over	..	..	..	..	..	45.9	45.9	1.9
Total	**212.4**	**233.6**	**313.3**	**452.9**	**451.6**	**731.3**	**2,395.0**	**100.0**

PERSONS WHO HAD RETIRED FROM FULL-TIME WORK AT AGE 45 AND OVER: MAIN SOURCE OF INCOME AT NOVEMBER 1986 AND SEX



PERSONS AGED 45 AND OVER (*a*): RETIRED AND NOT RETIRED FROM FULL TIME WORK BY AGE, NOVEMBER 1986

('000)

	Age at November 1986						
	45–49	*50–54*	*55–59*	*60–64*	*65–69*	*70 and over*	*Total*
Had retired from full-time work—	212.4	233.6	313.3	452.9	451.6	731.3	2,395.0
Had not retired at age less than 45	186.4	152.5	148.2	141.0	111.2	188.3	927.6
Had retired at age 45 and over	26.0	81.1	165.1	311.9	340.4	543.0	1,467.4
Had retired early	26.0	81.1	165.1	285.0	232.0	203.4	992.5
Had not retired early	. .	. .	. .	26.9	108.4	339.6	474.9
Had not retired from full-time work—	585.3	454.6	365.1	180.2	32.6	18.8	1,636.6
Did not intend to retire from full-time work	42.2	34.9	32.3	23.2	13.8	13.3	159.7
Intended to retire from full-time work	543.1	419.7	332.8	157.0	18.8	5.5	1,476.9
Intended to retire early	175.2	117.7	82.1	16.2	. .	. .	391.3
Did not intend to retire early	211.2	187.0	174.2	105.1	9.5	*	688.8
Did not know age intended to retire	156.7	115.0	76.5	35.7	9.3	3.6	396.8
Had never worked full-time and did not intend to work full-time	41.9	45.8	51.4	77.2	79.6	193.5	489.4
Total	**839.5**	**734.0**	**729.7**	**710.3**	**563.8**	**943.6**	**4,521.1**

(*a*) Excludes persons who were institutionalised or permanently unable to work who were not in the scope of this survey.

PERSONS WHO HAD RETIRED FROM FULL-TIME WORK AT AGE 45 AND OVER: SUMMARY OF CHARACTERISTICS AND AGE AT RETIREMENT, NOVEMBER 1986

	Age at retirement							
	45–49	*50–54*	*55–59*	*60–64*	*65–69*	*70 and over*	*Total*	
			—'000—					*per cent*
Belonged to a retirement scheme	33.2	53.7	123.1	225.7	125.5	10.4	571.6	39.0
Had superannuation cover	28.3	46.2	112.7	207.6	112.2	6.6	513.5	35.0
In last full-time job	27.3	44.5	110.3	204.2	108.3	5.3	499.8	34.1
In some previous job	*	*	5.8		3.9	*	13.7	0.9
Had life assurance or similar scheme	5.0	7.5	10.4	18.1	13.3	3.8	58.1	4.0
Did not belong to a retirement scheme	122.3	171.4	169.7	222.7	174.1	35.5	895.8	61.0
Total	*155.6*	*225.1*	*292.8*	*448.4*	*299.6*	*45.9*	*1,467.4*	*100.0*
Superannuation, life assurance, or similar scheme	4.3	10.7	37.3	72.1	27.0	*	153.7	10.5
Invalid/age/supporting parent's/widow's pension	32.5	61.9	83.7	146.4	189.2	23.3	537.0	36.6
War disability/repat/service/war widow's pension	4.7	10.7	24.6	86.9	15.0	*	144.0	9.8
Investments/interest/stocks/debentures, etc.	8.1	18.5	42.8	53.0	27.3	10.1	159.9	10.9
Savings/sale of assets	6.4	13.8	27.8	38.3	21.0	4.9	112.1	7.6
Part-time work	11.9	13.8	10.2	11.0	8.0	*	56.3	3.8
Someone else's income	77.4	85.3	55.3	27.2	7.6	*	253.8	17.3
Other	10.3	10.4	11.1	13.4	4.4	*	50.5	3.4
Total	*155.6*	*225.1*	*292.8*	*448.4*	*299.6*	*45.9*	*1,467.4*	*100.0*

PERSONS WHO INTENDED TO RETIRE FROM FULL-TIME WORK: AGE INTENDED TO RETIRE AND AGE AT NOVEMBER 1986

Age intended to retire	*Age at November 1986*						*Total*	
	45–49	*50–54*	*55–59*	*60–64*	*65–69*	*70 and over*		
	—'000—							*per cent*
MALES								
45–49	*	..	..	..	..	..	*	*
50–54	7.4	*	..	..	..	..	9.6	0.9
55–59	41.2	25.7	12.7	..	..	..	79.6	7.2
60–64	74.6	63.8	62.8	16.2	..	..	217.5	19.8
65–69	149.2	131.2	133.0	88.7	4.4	..	506.4	46.1
70 and over	3.7	4.4	*	3.9	3.9	*	20.8	1.9
Did not know	96.3	74.5	56.2	26.9	6.5	*	263.6	24.0
Total	*374.4*	*301.8*	*268.0*	*135.7*	*14.8*	*4.8*	*1,099.5*	*100.0*
FEMALES								
45–49	4.9	..	..	..	..	..	4.9	1.3
50–54	19.5	7.0	..	..	..	..	26.5	7.0
55–59	25.6	19.0	6.5	..	..	..	51.2	13.6
60–64	49.8	42.2	29.8	6.1	..	..	127.9	33.9
65–69	7.9	8.2	7.0	5.5	*	..	29.0	7.7
70 and over	*	*	*	*	*	*	4.8	1.3
Did not know	60.4	40.6	20.4	8.8	*	*	133.3	35.3
Total	*168.7*	*117.9*	*64.8*	*21.3*	*4.0*	*	*377.5*	*100.0*
PERSONS								
45–49	6.9	..	..	..	..	..	6.9	0.5
50–54	26.9	9.2	..	..	..	..	36.1	2.4
55–59	66.8	44.7	19.2	..	..	..	130.7	8.9
60–64	124.4	106.0	92.7	22.3	..	..	345.4	23.4
65–69	157.1	139.4	139.9	94.2	4.9	..	535.4	36.3
70 and over	4.3	5.3	4.5	4.9	4.7	*	25.6	1.7
Did not know	156.7	115.0	76.5	35.7	9.3	3.6	396.8	26.9
Total	**543.1**	**419.7**	**332.8**	**157.0**	**18.8**	**5.5**	**1,476.9**	**100.0**

PERSONS WHO INTENDED TO RETIRE FROM FULL-TIME WORK: SUMMARY OF CHARACTERISTICS AND AGE INTENDED TO RETIRE, NOVEMBER 1986

	Age intended to retire							
	Males			*Females*			*Persons(a)*	
	45–64	*65 and over*	*Total(a)*	*45–59*	*60 and over*	*Total(a)*		
	—'000—							*per cent*
Belonged to a retirement scheme	259.4	351.9	755.9	44.0	80.0	167.9	923.8	62.6
Had superannuation cover	239.3	297.9	651.0	39.5	70.8	144.1	795.1	53.8
In job at November 1986	230.8	278.9	616.1	38.7	66.9	138.8	754.8	51.1
In some previous job	8.5	19.0	35.0	*	4.0	5.4	40.3	2.7
Had life assurance or similar scheme	20.1	54.0	104.9	4.5	9.2	23.8	128.7	8.7
Did not belong to a retirement scheme	49.3	175.3	343.6	38.5	81.6	209.5	553.1	37.4
Total	308.7	527.2	1,099.5	82.6	161.6	377.5	1,476.9	100.0
Superannuation, life assurance, or similar scheme	127.8	116.7	289.8	12.5	28.2	51.7	341.5	23.1
Invalid/age/supporting parent's/widow's pension	40.8	298.7	427.3	10.1	75.7	128.9	556.2	37.7
War disability/repat/service/war widow's pension	10.4	9.0	22.9	*	*	4.2	27.1	1.8

PERSONS WHO INTENDED TO RETIRE FROM FULL-TIME WORK: SUMMARY OF CHARACTERISTICS AND AGE INTENDED TO RETIRE, NOVEMBER 1986—*continued*

	Age intended to retire							
	Males			*Females*			*Persons(a)*	
	45–64	*65 and over*	*Total(a)*	*45–59*	*60 and over*	*Total(a)*		
	—'000—							*per cent*
Investments/interest/ stocks/debentures, etc.	67.4	42.1	148.8	11.2	15.9	38.4	187.2	12.7
Savings/sale of assets	20.7	17.7	59.0	4.1	5.1	16.3	75.3	5.1
Part-time work	15.5	10.6	33.4	*	*	5.1	38.5	2.6
Someone else's income	*	*	6.8	39.7	23.9	95.9	102.7	7.0
Other	7.6	*	14.9	*	*	4.6	19.5	1.3
Did not know	15.5	26.5	96.6	*	7.2	32.4	128.9	8.7
Total	*308.7*	*527.2*	*1,099.5*	*82.6*	*161.6*	*377.5*	*1,476.9*	*100.0*

(*a*) Includes persons who did not know at what age they intended to retire.

Wage rates, earnings and income

Industrial conciliation and arbitration

Legal minimum rates of pay for some 90 per cent of Australian wage and salary earners are prescribed in awards and determinations of federal and State industrial tribunals or in collective agreements registered with them.

In June 1983 the Australian Conciliation and Arbitration Commission met to consider the formulation of new wage fixing principles in relation to the determination of national wage adjustments based on movements in the consumer price index.

On 23 September 1983, the Commission announced that it would try once again to operate a centralised system based on prima facie full indexation. It awarded an increase of 4.3 per cent, based on the CPI movements for the March and June 1983 quarters. The increase was operative from 6 October 1983 in all States except Queensland where it was operative from 10 October 1983. The increase was awarded on condition that any award be varied only if every union party to the award gave a public and unequivocal commitment to the new principles announced by the Commission. The majority of unions had given this commitment.

Under this new system, the Commission was to adjust its award wages and salaries every six months in relation to the last two quarterly movements of the CPI unless it was persuaded to the contrary.

The subsequent round of hearings in February–March 1984 resulted in the recommendation of a 4.1 per cent increase based on CPI movements for the September and December 1983 quarters. The increase was operative from 6 April 1984 in all States except Queensland where it was operative from 9 April 1984. The ABS treatment of the method of financing medical services under the Medicare scheme introduced in February 1984 resulted in a negative movement in the CPI for the March and June 1984 quarters. This led to agreement that no applications would be made to the Commission in relation to these quarters during October 1984.

The hearings in February–March 1985 resulted in the recommendation of a 2.6 per cent increase based on CPI movements for the September and December 1984 quarters. The increase was operative from 6 April 1985 in all States except Queensland where it was operative from 15 April 1985. In Queensland a number of awards were varied by 1.6 per cent only, while under some others there was no increase.

Following the National Wage Case hearings in October 1985, the Commission awarded an increase of 3.8 per cent to operate from the beginning of the first pay period to commence on or after 4 November 1985. The Commission also decided to defer discounting of wages for the price effects of devaluation until the next National Wage Case hearings.

In July 1986 the Commission awarded a 2.3 per cent increase, effective from 1 July 1986 in all States, except Queensland where it was effective from 7 July 1986.

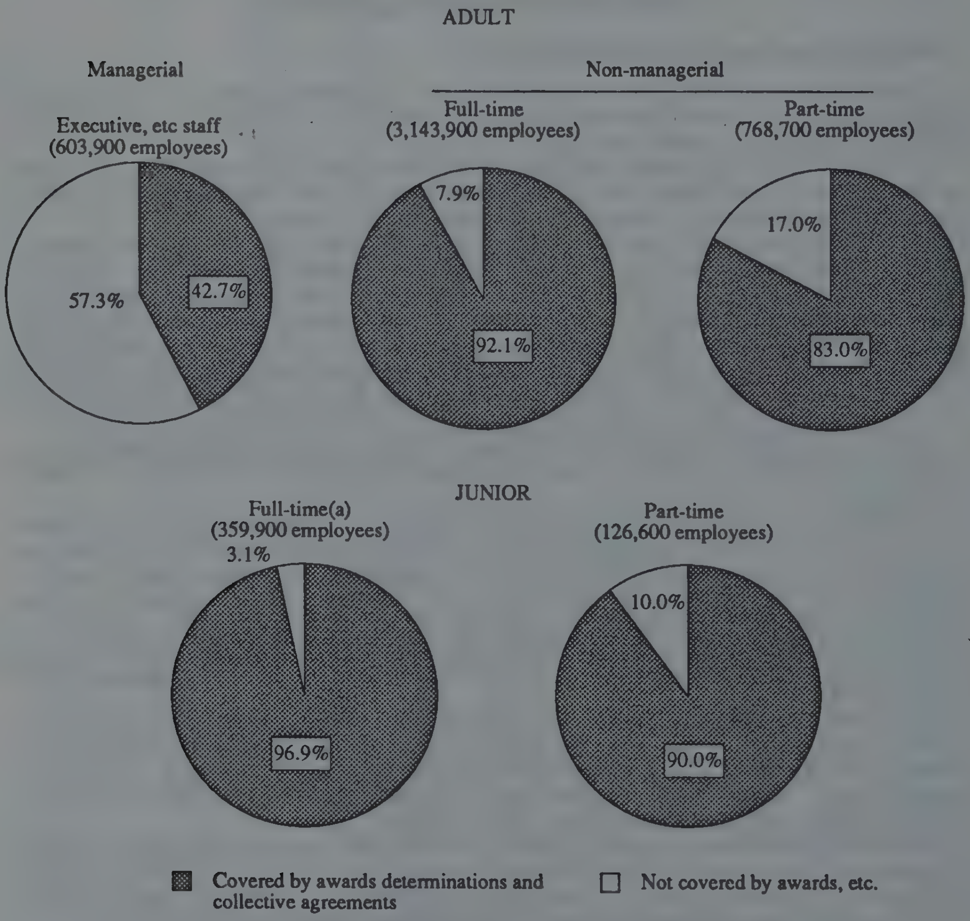
In March 1987, a two-tier wage fixing system superseded the CPI-based indexation. The first tier was a flat increase payable to all employees and the second tier will be a percentage increase (up to a maximum rate to be set by the Commission) which is negotiable between employees and employers.

Incidence of industrial awards

Set out below are details of the award coverage of employees obtained as a part of a sample survey conducted in May 1983. The survey was designed primarily to provide statistics of the distribution and composition of weekly earnings and hours of employees. The award coverage estimates shown are based on responses to a question which asked if employees had coverage under an award, determination, or registered collective agreement.

Employees covered by awards, etc. are employees whose rates of pay and conditions of work are normally varied in accordance with variations in a specific federal or State award, determination or collective agreement or a specific unregistered collective agreement (unregistered collective agreements dealing only with overaward pay are not included). Employees not covered by awards, etc. are those employees whose rates of pay and conditions of work are not varied in accordance with variations in a specific federal or State award, etc.

AWARD COVERAGE: EMPLOYEE CATEGORIES, AUSTRALIA, MAY 1985



(a) Includes managerial, executive, etc staff.

INCIDENCE OF AWARDS: ALL EMPLOYEES BY INDUSTRY, MAY 1985
(per cent)

Industry	Males				Females			
	Covered by awards, determinations and collective agreements			*Not covered by awards, etc.*	*Covered by awards, determinations and collective agreements*			*Not covered by awards, etc.*
	Federal	*State*	*Total (a)*		*Federal*	*State*	*Total (a)*	
Mining	53.1	26.2	81.9	18.1	*	*	*	*
Manufacturing	48.9	32.4	84.0	16.0	39.7	46.7	87.9	12.1
Food, beverages and tobacco	25.6	56.3	85.7	14.3	20.4	69.1	91.4	*
Textiles; clothing and footwear	57.4	*	80.7	*	63.2	30.7	94.2	*
Paper, paper products, printing and publishing	45.4	28.8	84.9	15.1	*	44.0	80.6	*
Chemical, petroleum and coal products	36.3	32.4	70.7	29.3	*	59.3	81.1	*
Metal products, machinery and equipment—	62.3	22.1	85.6	14.4	49.3	37.3	88.3	*
Basic metal products	38.8	46.3	85.7	*	*	*	*	*
Fabricated metal products; other machinery and equipment	61.0	17.8	80.6	19.4	42.1	42.2	86.6	*
Transport equipment	80.0	13.6	94.0	*	75.2	*	96.0	*
Other	39.7	41.1	82.6	17.4	*	54.6	80.9	*
Electricity, gas and water	38.6	59.9	98.5	*	*	*	98.3	*
Construction	35.4	38.9	77.0	23.0	*	42.0	56.0	44.6
Wholesale trade	28.1	33.4	66.2	33.8	11.8	62.2	77.2	22.8
Retail trade	30.5	45.7	77.9	22.1	6.3	80.5	87.5	12.5
Transport and storage	55.3	31.4	90.6	9.4	47.3	29.7	79.3	*
Communication	99.8	*	99.9	*	99.6	*	99.9	*
Finance, property and business services	32.1	28.7	69.1	30.9	29.1	46.4	84.2	15.8
Public administration and defence	53.4	44.3	98.6	*	64.9	32.2	98.2	*
Community services	14.0	72.9	88.4	11.6	6.9	82.5	90.9	9.1
Recreation, personal and other services	32.1	46.2	81.1	18.9	27.3	56.5	85.2	14.8
All industries	**40.1**	**40.4**	**83.4**	**16.6**	**21.6**	**63.4**	**87.4**	**12.6**

(*a*) Includes small numbers of employees covered by unregistered collective agreements.

INCIDENCE OF AWARDS: ALL EMPLOYEES BY OCCUPATION GROUP, MAY 1985
(per cent)

Occupation group	Males				Females			
	Covered by awards, determinations and collective agreements			*Not covered by awards, etc.*	*Covered by awards, determinations and collective agreements*			*Not covered by awards, etc.*
	Federal	*State*	*Total(a)*		*Federal*	*State*	*Total(a)*	
Professional, technical and related workers	24.8	63.4	90.3	9.7	6.6	87.9	96.2	3.8
Nurses	*	97.5	100.0	..	*	93.9	99.0	*
Teachers	13.0	77.7	93.1	*	6.1	86.3	95.0	*
Draftspersons and technicians	46.5	35.9	84.3	15.7	*	61.0	86.8	*
Administrative, executive and managerial workers	15.7	13.0	34.8	65.2	*	24.0	34.0	66.0
Clerical workers	48.7	33.3	87.0	13.0	27.9	53.3	85.4	14.6
Sales workers	17.7	57.1	78.2	21.8	4.2	83.4	88.6	11.4
Farmers, fisherpersons and related workers	*	61.0	87.5	*	*	*	*	*
Miners, quarry and related workers	57.1	*	86.6	*	*	*	*	*
Workers in transport and communications	50.5	37.6	91.7	8.3	*	44.1	88.2	*
Tradespersons, production-process workers and labourers, n.e.c.	52.9	37.7	92.5	7.5	53.8	40.0	94.8	5.2
Textile, clothing, footwear and leather goods makers and related workers	60.4	*	93.5	*	64.4	32.6	97.2	*
Machine toolmakers, metal machinists, mechanics, plumbers and related metal workers	63.8	27.2	92.3	7.7	*	*	*	*

INCIDENCE OF AWARDS: ALL EMPLOYEES BY OCCUPATION GROUP, MAY 1985
(per cent)—*continued*

	Males				*Females*			
	Covered by awards, determinations and collective agreements			*Not covered by awards, etc.*	*Covered by awards, determinations and collective agreements*			*Not covered by awards, etc.*
Occupation group	*Federal*	*State*	*Total(a)*		*Federal*	*State*	*Total(a)*	
Electricians and related electrical and electronics workers	67.1	27.6	95.7	*	*	*	*	*
Metalmaking and related workers(*b*)	68.3	26.8	95.5	*	90.4	*	95.7	*
Carpenters, cabinetmakers and related workers, building etc. tradespersons and construction workers(*c*)	41.6	44.1	87.3	12.7	*	*	*	*
Packers, wrappers, labellers, storepersons and freight handlers	41.1	50.9	94.3	*	*	67.2	94.1	*
Labourers, apprentices, factory workers, n.e.c.	42.5	47.5	92.8	7.2	*	41.9	92.7	*
Service, sport and recreation workers	20.1	71.2	92.3	7.7	17.8	71.5	90.0	10.0
All occupations	**40.1**	**40.4**	**83.4**	**16.6**	**21.6**	**63.4**	**87.4**	**12.6**

(*a*) Includes small numbers of employees covered by unregistered collective agreements. (*b*) Includes furnacemen, moulders and related metalmaking and treating workers, metal workers, metal and electrical production-process workers. (*c*) Includes carpenters, woodworking machinists, cabinetmakers and related workers, painters and decorators, bricklayers, plasterers and construction workers n.e.c.

Award rates of pay indexes

The award rates of pay indexes are based on a representative sample of award designations, designed to measure trends in rates payable under awards. The indexes are based on the occupation structure existing in May 1976. The base period chosen for the indexes is June 1976. Estimates of minimum award rates of pay for each component of the series are expressed as index numbers such that June 1976 = 100.0.

WAGE AND SALARY EARNERS: INDEXES OF WEEKLY AWARD RATES OF PAY
(Base: Weighted Average Minimum Award Rate, June 1976=100.0)
(Index Numbers)

	June					
Industry	*1982*	*1983*	*1984*	*1985*	*1986*	*1987*
			MALES			
Manufacturing—						
Food, beverages and tobacco	173.4	183.7	210.1	206.4	214.5	225.6
Textiles; clothing and footwear	176.6	187.0	203.6	208.9	217.4	230.6
Paper, paper products, printing and publishing	179.9	183.4	199.4	204.7	212.8	223.7
Chemical, petroleum and coal products	177.8	185.0	200.8	206.5	215.1	225.6
Metal products, machinery and equipment—	188.7	191.5	208.6	214.0	222.4	234.5
Basic metal products	180.2	182.7	199.0	204.6	214.4	225.6
Fabricated metal products; other machinery, and equipment	194.4	196.5	214.2	219.5	227.6	240.8
Transport equipment	185.7	189.3	206.6	211.8	219.9	230.9
Other	179.8	187.5	204.3	209.9	218.4	231.4
Non-manufacturing—						
Mining	173.8	181.2	197.4	203.1	211.2	221.8
Electricity, gas and water	174.5	183.6	199.4	204.3	212.0	221.3
Construction	179.8	189.2	206.6	211.4	220.7	231.2
Wholesale trade	178.4	187.0	204.9	210.4	218.7	231.2
Retail trade	176.5	185.5	203.2	208.4	216.1	228.9
Transport and storage	177.4	184.9	202.2	207.8	216.2	226.2
Communication	182.1	189.8	206.1	212.2	220.7	231.0
Finance, property and business services	173.7	184.1	200.2	205.9	213.8	224.6
Public administration and defence (*a*)	171.1	180.5	197.1	203.4	211.5	220.4
Community services	175.5	184.1	201.4	206.8	214.8	224.1
Recreation, personal and other services	170.7	182.6	199.3	204.6	212.9	224.0
Total all industries (*b*)	**178.3**	**186.1**	**203.1**	**208.5**	**216.9**	**227.8**

WAGE AND SALARY EARNERS: INDEXES OF WEEKLY AWARD RATES OF PAY—*continued*

(Base: Weighted Average Minimum Award Rate, June 1976=100.0)
(Index Numbers)

Industry	*June*					
	1982	*1983*	*1984*	*1985*	*1986*	*1987*
FEMALES						
Manufacturing—						
Food, beverages and tobacco	175.6	184.8	200.3	207.2	215.4	226.4
Textiles; clothing and footwear	173.4	186.7	202.9	208.3	216.2	229.9
Paper, paper products, printing and publishing	180.2	184.2	200.3	205.8	213.7	226.5
Chemical, petroleum and coal products	170.6	179.9	195.3	201.8	209.5	220.6
Metal products, machinery and equipment—	187.2	191.6	208.0	213.6	222.1	235.3
Basic metal products	172.6	179.3	194.5	199.4	206.9	217.9
Fabricated metal products; other machinery, and equipment	191.0	194.1	210.8	216.4	225.2	239.1
Transport equipment	183.2	190.4	206.9	212.6	220.6	232.9
Other	175.7	185.0	201.7	207.7	215.6	229.0
Non-manufacturing—						
Electricity, gas and water	170.7	177.3	193.1	198.3	205.9	212.1
Construction	171.9	180.5	201.1	206.4	214.2	226.3
Wholesale trade	176.6	186.8	203.1	209.2	217.2	229.7
Retail trade	172.6	182.0	200.5	206.2	214.0	226.7
Transport and storage	172.4	182.0	198.1	204.7	214.4	225.0
Communication	168.6	178.7	196.0	205.2	213.0	221.3
Finance, property and business services	172.1	183.7	199.5	204.8	212.5	223.8
Public administration and defence (*a*)	169.7	180.3	197.5	205.1	213.7	223.5
Community services	177.6	186.0	203.5	209.2	222.3	234.3
Recreation, personal and other services	170.6	180.0	196.0	201.9	209.8	222.3
Total all industries (*b*)	**175.4**	**184.6**	**201.5**	**207.5**	**217.0**	**229.0**

(*a*) Excludes employees in the Defence Forces. (*b*) Excludes employees in the Defence Forces, Agriculture, Services to Agriculture and employees in private households employing staff.

More detailed information including explanatory notes, definitions, etc., used in the indexes is contained in the monthly publication *Award Rates of Pay Indexes, Australia* (6312.0).

Average weekly earnings

Statistics of average weekly earnings are produced quarterly, and are based on employment and earnings information obtained from a sample survey of employers. They relate to earnings of employees in respect of a single pay period ending on or before a specific date near the middle of the quarter. If, for a particular survey respondent, that pay period was affected unduly by an industrial dispute, plant breakdown, fire, etc., particulars for the previous normal pay period were obtained. Total earnings are gross earnings in a pay period, while ordinary time earnings refers to that part of total earnings attributable to award, standard or agreed hours of work.

Statistics of average weekly earnings are published in the quarterly publication *Average Weekly Earnings, States and Australia* (6302.0). The current series was introduced in November 1983, to complete the redevelopment of average weekly earnings series from that based principally on information from payroll tax returns. Average weekly earnings statistics were revised back to August 1981 with the introduction of the new series.

AVERAGE WEEKLY EARNINGS OF EMPLOYEES

	Males			*Females*			*Persons*		
	Full-time adults		*All males*	*Full-time adults*		*All females*	*Full-time adults*		*All employees*
Reference period—pay period ending on or before	*Weekly ordinary time earnings*	*Weekly total earnings*	*Weekly total earnings*	*Weekly ordinary time earnings*	*Weekly total earnings*	*Weekly total earnings*	*Weekly ordinary time earnings*	*Weekly total earnings*	*Weekly total earnings*
					—dollars—				
1983—									
18 February	350.50	370.30	341.00	280.90	286.20	225.30	328.60	343.70	295.40
20 May	353.40	375.00	343.30	281.80	288.20	226.70	330.80	347.30	297.00
19 August	357.10	379.80	349.70	283.80	289.90	228.30	333.50	350.80	300.80
18 November	368.90	394.10	362.00	297.40	303.90	237.20	346.00	365.10	311.30
1984—									
17 February	376.20	400.70	370.60	304.10	311.00	246.50	353.10	371.90	321.30
18 May	388.00	415.70	383.80	316.90	324.20	257.10	365.20	386.30	333.40
17 August	392.40	419.20	386.20	319.00	326.70	256.20	369.00	389.80	334.30
16 November	397.80	427.30	389.50	325.50	333.50	255.10	375.30	398.10	335.40
1985—									
15 February	399.60	429.00	392.70	328.40	335.90	260.10	377.50	400.10	340.10
17 May	404.50	435.50	397.20	334.40	343.10	263.40	382.80	406.90	344.10
16 August	409.80	441.60	403.10	338.70	346.80	265.00	387.90	412.50	347.80
15 November	419.60	453.60	413.90	345.30	353.70	268.40	396.90	423.10	355.60
1986—									
21 February	427.20	460.10	422.70	352.80	360.60	276.40	404.20	429.50	364.10
16 May	432.60	465.90	425.50	356.40	364.90	278.20	409.20	434.90	366.50
15 August	444.00	476.20	437.20	363.60	371.90	282.90	418.90	443.70	373.70
21 November	452.10	488.60	446.30	372.70	382.00	287.60	427.20	455.20	380.60
1987									
20 February	454.80	488.60	445.30	375.70	384.20	291.10	429.90	455.70	381.80

In the November survey, additional information is collected relating to part-time and junior employees, managerial staff and hours of work.

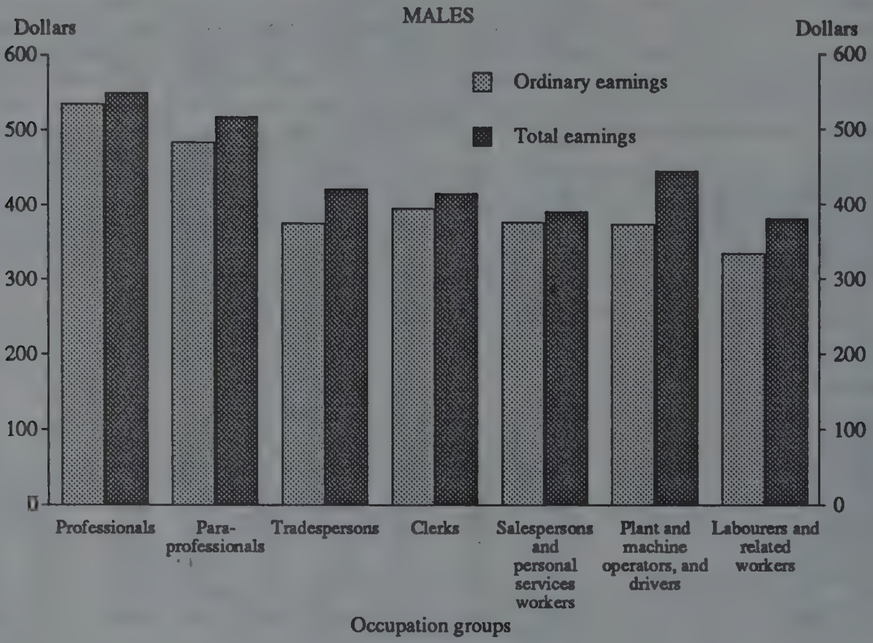
FULL-TIME NON-MANAGERIAL EMPLOYEES: AVERAGE EARNINGS AND HOURS PAID FOR, INDUSTRIES, NOVEMBER 1986

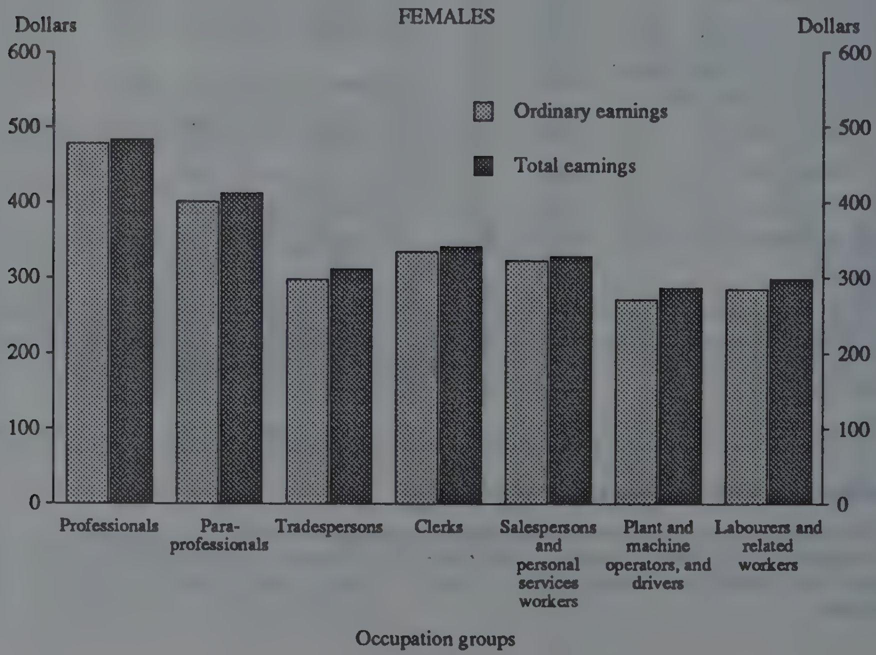
	Males			*Females*			*Persons*		
	Average weekly earnings ($)	*Average weekly hours paid for*	*Average hourly earnings* ($)	*Average weekly earnings* ($)	*Average weekly hours paid for*	*Average hourly earnings* ($)	*Average weekly earnings* ($)	*Average weekly hours paid for*	*Average hourly earnings* ($)
ADULT EMPLOYEES									
Mining	675.40	42.3	15.98	427.90	39.0	10.96	657.30	42.0	15.64
Manufacturing—	437.40	41.9	10.43	329.80	39.6	8.34	411.80	41.4	9.95
Food, beverages and tobacco	429.40	42.1	10.20	346.40	39.9	8.69	409.70	41.6	9.86
Textiles; clothing and footwear	400.70	43.9	9.13	298.60	39.6	7.54	343.70	41.5	8.28
Paper, printing and publishing	482.50	40.8	11.84	349.00	38.8	8.99	440.30	40.1	10.97
Chemical, petroleum and coal products	504.90	41.8	12.08	353.80	38.7	9.15	459.20	40.9	11.24
Metal products, machinery and equipment—									
Basic metal products	499.00	41.6	12.00	387.40	38.0	10.20	490.60	41.3	11.87
Fabricated metal products; other machinery and equipment	427.30	42.9	9.97	326.00	40.2	8.12	407.80	42.3	9.63
Transport equipment	431.30	40.4	10.69	340.80	39.1	8.71	420.90	40.2	10.46
Total metal products, etc.	*443.40*	*41.9*	*10.59*	*335.20*	*39.7*	*8.44*	*427.30*	*41.5*	*10.28*
Other manufacturing	398.80	41.9	9.51	321.60	40.0	8.04	383.20	41.5	9.23
Electricity, gas and water	493.90	39.0	12.65	383.20	37.3	10.26	484.40	38.9	12.45
Construction	482.90	41.5	11.64	363.20	37.7	9.64	472.70	41.2	11.49
Wholesale trade	419.10	40.4	10.39	351.40	38.6	9.09	398.70	39.8	10.01
Retail trade	358.80	40.9	8.77	310.50	39.5	7.85	339.80	40.4	8.41
Transport and storage	482.00	42.0	11.47	391.90	39.8	9.84	470.20	41.7	11.26
Communication	445.00	38.8	11.47	389.40	38.5	10.10	432.50	38.7	11.17
Finance, property and business services	448.70	39.4	11.38	365.30	38.1	9.60	406.30	38.7	10.49
Public administration and defence	429.00	37.8	11.35	384.70	36.7	10.48	414.30	37.4	11.07
Community services	491.00	38.6	12.71	409.40	37.4	10.95	442.70	37.9	11.68
Recreation, personal and other services	400.20	40.0	10.00	334.10	39.2	8.53	372.40	39.7	9.39
Total all industries	**456.00**	**40.5**	**11.26**	**372.50**	**38.2**	**9.75**	**427.80**	**39.7**	**10.77**
JUNIOR EMPLOYEES									
Mining	388.60	40.1	9.70	260.70	37.6	6.93	351.50	39.3	8.93
Manufacturing—	217.80	39.2	5.56	202.10	39.0	5.17	213.30	39.1	5.45
Food, beverages and tobacco	242.40	40.7	5.96	210.90	39.9	5.29	231.40	40.4	5.73
Textiles; clothing and footwear	238.60	41.2	5.80	189.70	38.4	4.94	207.60	39.4	5.27
Paper, printing and publishing	220.50	38.9	5.67	217.40	39.6	5.49	219.20	39.2	5.59
Chemical, petroleum and coal products	256.60	38.8	6.62	*	38.1	*	*	38.5	*
Metal products, machinery and equipment—									
Basic metal products	260.20	38.0	6.85	244.80	37.9	6.46	258.50	38.0	6.81
Fabricated metal products; other machinery and equipment	214.50	38.8	5.53	197.30	38.8	5.09	211.40	38.8	5.45
Transport equipment	231.60	38.9	5.96	228.40	38.5	5.93	231.40	38.9	5.96
Total metal products, etc.	*226.90*	*38.7*	*5.87*	*207.30*	*38.6*	*5.37*	*224.20*	*38.7*	*5.80*
Other manufacturing	185.60	39.0	4.76	196.20	39.6	4.95	187.50	39.1	4.79
Electricity, gas and water	271.10	38.3	7.07	236.50	37.1	6.38	262.70	38.0	6.91
Construction	236.60	39.1	6.05	203.60	38.0	5.36	232.70	38.9	5.97
Wholesale trade	225.80	40.8	5.54	222.00	39.4	5.64	224.80	40.4	5.56
Retail trade	194.20	40.5	4.79	194.30	39.0	4.98	194.20	39.8	4.88
Transport and storage	231.70	39.3	5.90	220.00	38.8	5.66	227.60	39.1	5.82
Communication	308.10	36.8	8.38	242.20	36.8	6.58	289.40	36.8	7.87
Finance, property and business services	229.40	39.1	5.86	225.40	38.5	5.86	226.60	38.7	5.86
Public administration and defence	236.10	37.3	6.34	230.90	36.6	6.32	232.90	36.8	6.32
Community services	244.40	37.1	6.59	236 90	37.8	6.27	238.30	37.6	6.33
Recreation, personal and other services	188.30	40.2	4.68	199.80	40.5	4.94	196.20	40.4	4.86
Total all industries	**220.90**	**39.5**	**5.59**	**214.50**	**38.7**	**5.55**	**217.90**	**39.1**	**5.57**

Distribution and composition of earnings

Statistics on the distribution of employees according to weekly earnings and hours, and the composition of weekly earnings and hours for various categories of employees and principal occupations are produced from a survey of employers currently conducted in May each year.

AVERAGE WEEKLY ORDINARY TIME AND TOTAL EARNINGS OF FULL-TIME ADULT NON-MANAGERIAL EMPLOYEES IN MAJOR OCCUPATION GROUPS, MAY 1986





Employers selected are requested to supply relevant details, for a sample of their employees randomly selected by the employers in accordance with instructions supplied by the ABS. Employers with fewer than ten employees are required to complete a questionnaire for every employee.

The information presented in this sub-section relates solely to the earnings data collected in the May 1986 survey. The table below sets out the composition of average weekly earnings of employees by State and Territory.

COMPOSITION OF AVERAGE WEEKLY EARNINGS: ALL EMPLOYEES, STATES AND TERRITORIES, MAY 1986
($)

	N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
					MALES				
Overtime	33.40	29.50	26.80	22.50	33.40	26.90	44.30	23.20	30.10
Ordinary time—									
Award or agreed base rate of pay	388.20	383.70	366.20	365.20	391.30	370.40	416.50	469.40	383.50
Payment by measured result (*a*)	6.70	2.70	6.30	*	4.20	*	*	*	5.00
Overaward and other pay	10.00	10.40	7.40	8.10	6.50	6.00	14.60	2.70	9.10
Total	**438.30**	**426.40**	**406.70**	**399.00**	**435.40**	**414.20**	**477.70**	**496.40**	**427.70**
					FEMALES				
Overtime	6.10	6.50	4.30	4.40	4.50	6.10	*	*	5.70
Ordinary time—									
Award or agreed base rate of pay	280.50	269.80	256.60	251.00	258.80	255.40	323.20	329.20	270.20
Payment by measured result (*a*)	0.60	*	0.70	*	*	0.20	*	*	0.90
Over award and other pay	4.40	4.80	3.00	2.40	1.70	2.00	7.10	1.10	3.80
Total	**291.70**	**282.90**	**264.70**	**258.30**	**265.20**	**263.60**	**338.80**	**339.00**	**280.60**

(*a*) Earnings which vary according to measured performance (e.g. piecework, production and task bonuses or commission).

Average weekly ordinary time earnings can vary across occupations, and this is shown in the accompanying charts. Note that for the 1986 survey, the *Classification and Classified List of Occupations* (CCLO) was completely replaced by the *Australian Standard Classification of Occupations* (ASCO). Details of ASCO can be found in *ASCO, First Edition Statistical Classification* (1222.0) which was released in September 1986. An Information Paper: *ASCO—Australian Classification of Occupations Introduction to ASCO Publications—First Edition* (1221.0) was also released at that time.

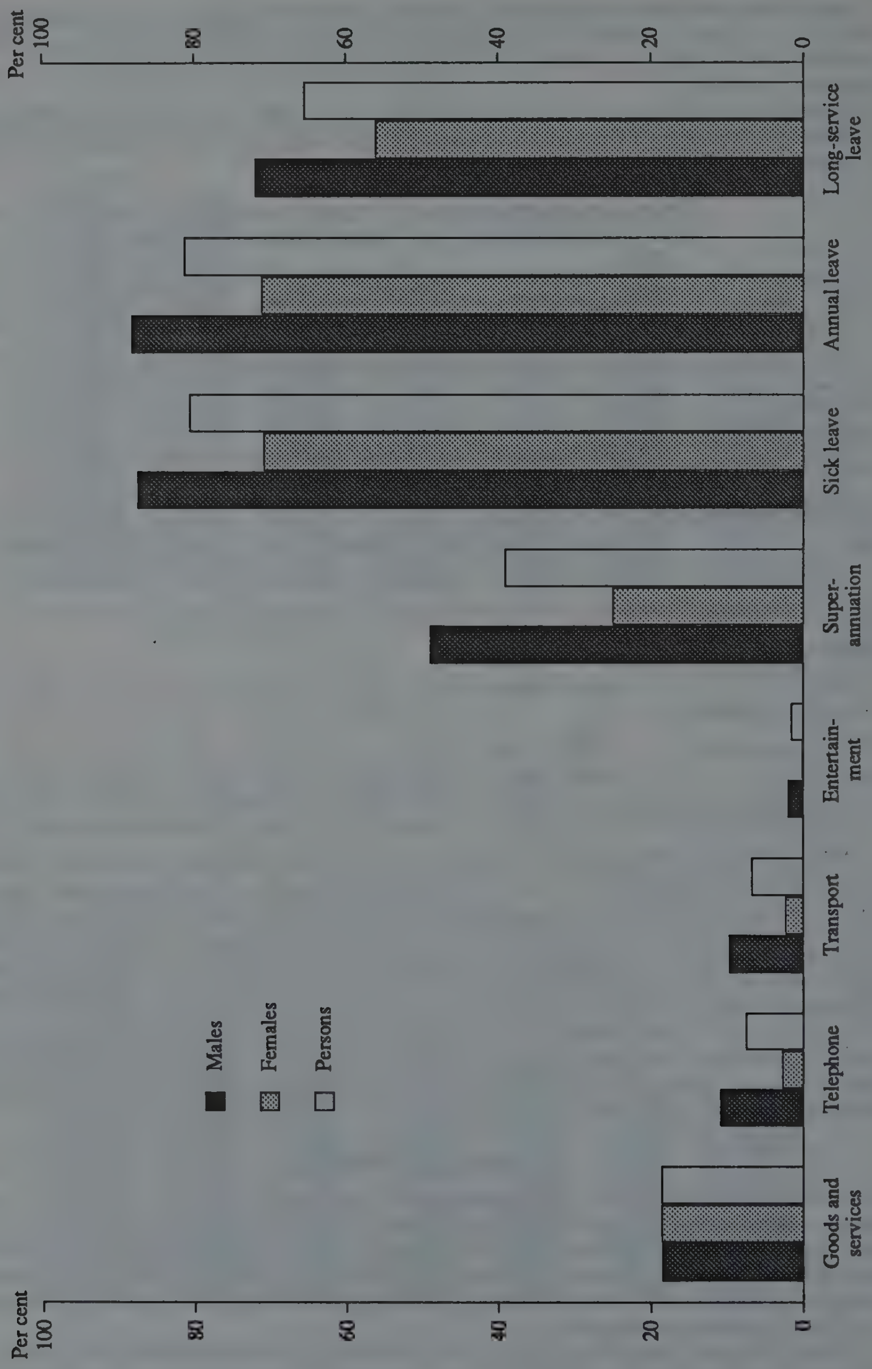
In 1986, males in the 'Professionals' group had the highest average weekly earnings while those in 'Labourers and related workers' had the lowest. For females, the occupation group with the highest average weekly earnings was 'Professionals' and the lowest was 'Plant and machine operators and drivers'.

Non-wage benefits

The previous section concentrated on monetary remuneration for employment. In this section, attention is given to a range of benefits other than wages, salaries and supplements that may arise from employment. Benefits covered are employer-provided concessions or allowances such as holiday costs, low interest finance, goods and services, housing, electricity, telephone, transport, medical, union dues, club fees, entertainment, shares, study leave, superannuation or children's education expenses.

Other than leave provisions, which were available to more than two-thirds of employees, superannuation was the most regularly received benefit. The incidence of this benefit was considerably proportionally higher for males than for females in every occupation group.

ALL EMPLOYEES: SELECTED BENEFITS RECEIVED, AUGUST 1986



The survey also showed that employees at the highest levels of earnings were more likely to receive non-wage benefits. The exceptions were goods and services and annual and sick leave. Children's education expenses were rarely provided. There was also an increased likelihood of receiving benefits as employees' hours of work increased.

ALL EMPLOYEES: TYPE OF BENEFIT RECEIVED AND WEEKLY EARNINGS IN MAIN JOB AUGUST 1986

	Weekly earnings in main job (dollars)								
	Under 120	*120 and under 200*	*200 and under 280*	*280 and under 360*	*360 and under 440*	*440 and under 520*	*520 and under 600*	*600 and over*	*Total*
Total employees ('000)	**538.5**	**595.2**	**944.0**	**1,323.3**	**882.0**	**562.3**	**353.4**	**484.1**	**5,683.4**
	PERCENTAGE OF EMPLOYEES RECEIVING BENEFIT								
Type of benefit—									
Holiday expenses	*	1.4	2.9	4.1	4.8	5.5	5.7	7.6	3.9
Low-interest finance	*	0.6	1.6	2.6	3.0	4.0	4.1	6.6	2.6
Goods and services	13.1	20.1	21.2	20.9	18.6	16.8	16.9	18.0	18.9
Housing	2.0	2.6	3.2	2.1	2.5	4.1	6.3	7.2	3.3
Electricity	1.8	2.1	2.1	1.0	1.6	1.8	2.0	3.4	1.8
Telephone	3.7	3.8	3.8	4.5	8.8	12.0	13.6	2.8	7.8
Transport	2.3	3.6	3.4	4.2	7.7	10.4	13.7	20.9	7.0
Medical	1.1	1.4	2.0	2.6	2.8	3.9	4.7	7.9	3.0
Union dues	0.8	0.8	0.8	1.3	1.9	2.1	3.2	5.9	1.8
Club fees	*	*	0.4	0.5	1.0	1.2	2.0	3.6	0.9
Entertainment allowance	*	*	*	0.8	1.6	2.8	4.1	8.5	1.8
Shares	*	0.8	0.7	1.4	1.3	2.1	2.1	3.5	1.4
Study leave	1.4	1.4	1.3	1.6	2.0	3.2	3.7	2.9	2.0
Superannuation	3.1	10.8	23.8	41.0	51.3	59.8	68.6	74.0	39.4
Children's education expenses	*	*	*	*	*	*	*	*	0.2
Sick leave	17.6	63.1	82.1	92.0	93.5	94.2	94.1	92.7	80.9
Annual leave	17.1	64.5	82.8	92.8	94.4	94.2	94.7	93.1	81.5
Long-service leave	11.4	41.3	58.7	74.8	79.6	83.8	87.2	83.6	65.8

ALL EMPLOYEES: TYPE OF BENEFIT RECEIVED AND HOURS WORKED IN MAIN JOB AUGUST 1986

	Hours worked in main job						
	Less than 20	*20–29*	*30–34*	*35–39*	*40*	*41 and over*	*Total*
Total employees ('000)	**929.9**	**468.9**	**531.8**	**1,172.2**	**1,269.2**	**1,311.5**	**5,683.4**
	PERCENTAGE OF EMPLOYEES RECEIVING BENEFIT						
Type of benefit—							
Holiday expenses	2.5	3.3	4.4	3.8	4.1	4.8	3.9
Low-interest finance	1.2	2.0	4.1	2.7	2.3	3.4	2.6
Goods and services	14.7	17.4	19.7	16.6	19.1	23.5	18.9
Housing	1.7	1.9	2.5	2.1	3.4	6.1	3.3
Electricity	1.1	1.1	1.3	0.9	1.4	3.8	1.8
Telephone	5.1	4.5	6.2	4.5	6.5	15.7	7.8
Transport	3.2	2.8	3.7	3.2	6.4	16.2	7.0
Medical	1.4	2.3	3.9	2.4	3.2	4.2	3.0
Union dues	1.1	0.9	1.4	1.1	1.4	3.8	1.8
Club fees	0.4	*	*	0.6	0.7	2.2	0.9
Entertainment allowance	0.6	*	1.0	0.7	1.6	4.4	1.8
Shares	1.1	1.0	0.9	0.7	1.0	2.9	1.4
Study leave	1.5	2.2	2.5	2.5	1.4	2.1	2.0
Superannuation	19.1	27.6	43.6	49.5	38.5	47.3	39.4
Children's education expenses	*	*	*	*	*	0.4	0.2
Sick leave	41.7	63.6	86.7	93.9	93.0	88.0	80.9
Annual leave	41.9	64.2	87.0	94.0	93.7	89.3	81.5
Long-service leave	35.9	53.4	73.5	79.3	71.7	69.3	65.8

Hours of work and work patterns

It is widely recognised that statistics of hours of work and patterns of work are essential for the study of economic activity, productivity, working conditions, living standards and the quality of life of working people. In this section, a range of data has been brought together on work patterns and hours of work.

EMPLOYED PERSONS: AGGREGATE AND AVERAGE WEEKLY HOURS WORKED(*a*)

		Females			
	Males	*Married*	*Not married*	*Total*	*Persons*
AUGUST 1985					
Aggregate weekly hours worked (million)	162.6	42.2	33.3	75.5	238.1
By full-time workers	158.5	30.8	29.6	60.4	218.9
By part-time workers	4.1	11.4	3.7	15.1	19.2
Average weekly hours worked	39.8	28.0	31.6	29.5	35.8
By full-time workers	41.3	38.3	37.0	37.7	40.3
By part-time workers	16.1	16.3	14.6	15.8	15.9
By wage and salary earners	38.1	27.7	31.5	29.4	34.6
By other than wage and salary earners(*b*)	47.0	29.6	34.5	30.2	41.9
Average weekly hours worked by persons who worked one hour or more in the survey week	41.9	29.7	33.2	31.1	37.7
By full-time workers	43.5	40.6	38.9	39.8	42.4
By part-time workers	17.3	17.2	15.1	16.6	16.8
AUGUST 1986					
Aggregate weekly hours worked (million)	166.8	46.3	33.1	79.4	246.2
By full-time workers	162.5	34.0	29.6	63.6	226.1
By part-time workers	4.3	12.3	3.5	15.9	20.1
Average weekly hours worked	39.9	28.1	31.4	29.4	35.8
By full-time workers	41.6	38.6	37.0	37.8	40.5
By part-time workers	15.4	16.0	13.9	15.5	15.5
By wage and salary earners	38.4	28.0	31.4	29.5	34.7
By other than wage and salary earners(*c*)	46.5	28.4	30.5	28.7	40.8
Average weekly hours worked by persons who worked one hour or more in the survey week	42.0	29.5	33.0	30.9	37.6
By full-time workers	43.8	40.6	38.9	39.8	42.6
By part-time workers	16.3	16.8	14.6	16.3	16.3
AUGUST 1987					
Aggregate weekly hours worked (million)	169.8	48.1	33.9	81.9	251.7
By full-time workers	165.0	35.0	29.8	64.8	229.7
By part-time workers	4.8	13.1	4.1	17.2	22.0
Average weekly hours worked	39.8	28.0	31.0	29.2	35.6
By full-time workers	41.8	38.5	37.2	37.9	40.6
By part-time workers	15.3	16.2	14.0	15.6	15.5
By wage and salary earners	38.3	27.9	31.0	29.3	34.6
By other than wage and salary earners(*c*)	46.6	28.2	30.4	28.5	40.8
Average weekly hours worked by persons who worked one hour or more in the survey week	41.9	29.5	32.5	30.7	37.4
By full-time workers	43.9	40.7	39.2	40.0	42.7
By part-time workers	16.2	17.0	14.6	16.4	16.3

(*a*) The figures refer to actual hours worked not hours paid for. (*b*) Comprises employers, self-employed persons and unpaid family helpers who worked 15 hours or more. (*c*) Comprises employers, self-employed persons and unpaid family helpers who worked one hour or more.

The table above sets out aggregate and average hours worked by employed persons who are either working full-time or part-time. The following table provides information on average hours worked by employed persons by the industry of their employment.

EMPLOYED PERSONS: AVERAGE WEEKLY HOURS WORKED(*a*) BY INDUSTRY AUGUST 1987

Industry	*Males*	*Females*		*Persons*
		Married	*Total*	
Agriculture, forestry, fishing and hunting	48.2	29.3	29.2	43.1
Agriculture and services to agriculture	48.5	29.7	29.5	43.3
Forestry and logging, fishing and hunting	44.6	*	*	41.0
Mining	38.6	32.5	33.4	38.1
Manufacturing	39.3	31.9	33.1	37.7
Food, beverages and tobacco	38.4	30.6	30.1	36.0
Metal products	39.7	32.1	33.2	38.8
Other manufacturing	39.5	32.1	33.9	37.8
Electricity, gas and water	35.5	30.5	33.2	35.3
Construction	39.2	17.7	20.1	36.8
Wholesale and retail trade	40.9	29.0	27.7	35.1
Wholesale trade	41.8	28.3	31.1	38.6
Retail trade	40.4	29.2	26.8	33.6
Transport and storage	39.6	25.3	29.3	37.7
Communication	34.5	28.0	28.3	32.9
Finance, property and business services	40.5	27.6	30.6	35.8
Public administration and defence	35.6	28.3	30.6	33.7
Community services	38.5	27.0	29.1	32.4
Recreation, personal and other services	39.2	27.5	27.4	32.5
All industries	**39.8**	**28.0**	**29.2**	**35.6**

(*a*) The estimates refer to actual hours worked, not hours paid for.

Statistics on overtime are produced from a survey conducted each quarter. Estimates prior to November 1983 are not strictly comparable to later estimates. Background information about the job vacancies series is provided in *Information Paper: New Statistical Series: Employment, Average Weekly Earnings, Job Vacancies and Overtime* (6256.0).

OVERTIME BY INDUSTRY

Industry	*May 1982(a)*	*May 1983(a)*	*November 1983*		*May 1984(b)*	*May 1985(b)*	*May 1986(b)*	*May 1987(b)*
			old(a)	*new(b)*				
AVERAGE WEEKLY OVERTIME HOURS PER EMPLOYEE WORKING OVERTIME								
Mining	9.6	8.4	9.0	8.9	8.7	10.5	9.2	9.4
Manufacturing	7.6	7.5	8.0	7.8	7.8	7.7	7.8	7.9
Food, beverages and tobacco	6.8	6.7	7.7	6.9	6.0	6.3	7.3	6.8
Textiles; clothing and footwear	9.8	10.5	10.1	8.6	8.6	8.9	7.9	8.4
Paper, printing, etc.	5.6	6.5	7.4	6.9	6.2	6.0	6.6	7.4
Chemical, petroleum and coal products	7.7	7.4	6.9	7.6	10.3	9.0	8.7	8.6
Basic metal products	7.6	7.3	8.5	9.0	10.7	9.2	9.3	9.9
Fabricated metal products; other machinery, etc.	7.5	7.7	7.5	8.9	7.7	7.6	7.5	7.8
Transport equipment	8.1	7.3	8.6	8.1	7.8	9.3	8.4	8.9
Other manufacturing	8.1	7.5	7.9	7.0	7.8	7.1	7.9	7.6
Electricity, gas and water	8.0	7.9	7.4	6.9	7.2	7.3	7.0	7.2
Construction	8.0	8.2	7.6	7.8	6.9	7.3	7.0	8.0
Wholesale trade	6.2	6.3	6.2	5.9	6.0	6.4	6.6	6.8
Retail trade	4.4	3.9	4.0	3.9	3.7	3.5	3.9	3.7
Transport and storage; communication	7.5	7.4	7.2	7.0	7.3	7.6	7.9	7.3
Public administration and defence	7.1	6.8	7.4	5.6	5.6	5.0	5.3	5.0
Community services						6.3	6.0	5.9
Other	5.3	5.2	5.1	5.5	6.2	6.1	5.2	5.4
All industries	**7.1**	**6.9**	**7.1**	**6.7**	**6.7**	**6.8**	**6.8**	**6.8**

OVERTIME BY INDUSTRY—*continued*

Industry	*May 1982(a)*	*May 1983(a)*	*November 1983*		*May 1984(b)*	*May 1985(b)*	*May 1986(b)*	*May 1987(b)*
			old(a)	*new(b)*				
PERCENTAGE OF EMPLOYEES IN THE SURVEY WORKING OVERTIME								
Mining	53.3	45.3	45.6	42.4	46.7	42.6	46.2	44.1
Manufacturing	28.9	23.7	29.9	28.1	28.0	31.5	31.5	33.6
Food, beverages and tobacco	36.4	30.8	38.2	35.4	34.2	37.3	38.4	40.4
Textiles; clothing and footwear	19.9	21.2	26.8	27.0	24.6	24.7	20.3	24.8
Paper, printing, etc.	26.3	20.7	25.1	22.6	17.9	19.7	19.7	24.7
Chemical, petroleum and coal products	22.7	23.4	25.9	26.3	22.2	22.0	24.0	29.3
Basic metal products	36.1	29.3	36.0	30.6	38.0	37.7	41.8	45.1
Fabricated metal products; other machinery, etc.	29.0	22.9	27.6	26.2	26.8	31.1	33.9	35.5
Transport equipment	28.0	14.3	22.6	24.5	30.7	37.6	32.5	32.7
Other manufacturing	26.8	24.2	32.1	28.3	27.8	33.7	33.3	35.5
Electricity, gas and water	26.0	22.0	21.7	21.7	23.0	24.6	23.8	21.0
Construction	29.7	23.4	24.4	20.0	17.4	21.1	25.4	21.5
Wholesale trade	17.1	17.0	17.7	18.3	15.5	16.7	15.3	15.2
Retail trade	19.0	17.4	19.3	14.5	15.5	19.3	17.8	16.8
Transport and storage; communication	35.3	27.6	30.7	26.9	27.0	31.9	31.5	28.6
Public administration and defence	7.8	7.7	7.2	7.7	8.3	14.8	14.0	13.7
Community services						5.0	6.2	7.0
Other	10.8	11.8	10.9	8.2	7.4	9.9	9.5	10.0
All industries	**20.4**	**17.4**	**19.0**	**16.3**	**16.5**	**18.2**	**18.1**	**18.1**

(*a*) Result from payroll tax based survey. (*b*) Result of sample survey of employers.

Labour costs

Major labour costs statistics are produced from an annual survey of employers. This survey was first conducted in 1986. The information collected related to the costs incurred by private sector employers, for superannuation contributions; workers' compensation; earnings; payroll tax; and severance, termination and redundancy payments for the year ended 30 June 1986.

MAJOR LABOUR COSTS: PRIVATE SECTOR, INDUSTRIES, 1985–86

Type of cost	*Mining*	*Manufacturing*	*Construction*	*Wholesale and retail trade*	*Transport; Communication*	*Finance, property and business services*	*Community services; Electricity, gas and water*	*Recreation*	*Total all industries*
COSTS ($ million)									
Earnings—	2,447	19,556	3,922	16,104	3,060	9,363	6,178	3,019	63,649
Gross wages and salaries	2,381	19,059	3,868	15,739	3,001	9,156	6,092	2,974	62,269
Severance, termination and redundancy payments	66	497	54	365	59	207	87	45	1,380
Other labour costs—	335	2,400	410	1,305	344	977	379	194	6,343
Payroll tax	125	935	115	559	123	383	93	95	2,427
Workers' compensation	103	833	186	362	126	101	102	63	1,876
Superannuation	107	632	109	384	95	493	184	36	2,040
Total labour costs	**2,782**	**21,956**	**4,331**	**17,408**	**3,404**	**10,341**	**6,558**	**3,214**	**69,993**

MAJOR LABOUR COSTS: PRIVATE SECTOR, INDUSTRIES, 1985–86—*continued*

Type of cost	*Mining*	*Manufacturing*	*Construction*	*Wholesale and retail trade*	*Transport; Communication*	*Finance, property and business services*	*Community services; Electricity, gas and water*	*Recreation*	*Total all industries*
COSTS PER EMPLOYEE									
			—dollars—						
Earnings—	32,440	20,060	20,080	14,550	21,210	19,230	15,750	11,120	17,450
Gross wages and salaries	31,570	19,550	19,810	14,220	20,800	18,800	15,530	10,950	17,070
Severance, termination and redundancy payments	870	510	280	330	410	430	220	170	380
Other labour costs—	4,440	2,460	2,100	1,190	2,380	2,010	970	710	1,740
Payroll tax	1,660	960	590	510	850	790	240	350	670
Workers' compensation	1,360	850	950	330	870	210	260	230	510
Superannuation	1,420	650	560	350	660	1,010	470	130	560
Total labour costs	**36,880**	**22,530**	**22,180**	**15,730**	**23,590**	**21,230**	**16,720**	**11,840**	**19,190**
			—per cent—						
Superannuation— Employees covered	77.7	48.4	39.0	22.2	33.5	37.2	20.5	7.3	32.3
			—dollars—						
Cost per employee covered	1,850	1,350	1,370	1,560	1,990	2,650	2,250	1,800	1,720
COSTS AS A PERCENTAGE OF TOTAL LABOUR COSTS									
Earnings—	88.0	89.1	90.5	92.5	89.9	90.5	94.2	93.9	90.9
Gross wages and salaries	85.6	86.8	89.3	90.4	88.2	88.5	92.9	92.5	89.0
Severance, termination and redundancy payments	2.4	2.3	1.2	2.1	1.7	2.0	1.3	1.4	2.0
Other labour costs—	12.1	11.0	9.4	7.5	10.1	9.5	5.8	6.1	9.1
Payroll tax	4.5	4.3	2.6	3.2	3.6	3.7	1.4	3.0	3.5
Workers' compensation	3.7	3.8	4.3	2.1	3.7	1.0	1.6	2.0	2.7
Superannuation	3.9	2.9	2.5	2.2	2.8	4.8	2.8	1.1	2.9
Total labour costs	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
COSTS AS A PERCENTAGE OF EARNINGS									
Payroll tax	5.1	4.8	2.9	3.5	4.0	4.1	1.5	3.2	3.8
Workers' compensation	4.2	4.3	4.8	2.2	4.1	1.1	1.7	2.1	3.0
Superannuation	4.4	3.2	2.8	2.4	3.1	5.3	3.0	1.2	3.2
Other labour costs	**13.7**	**12.3**	**10.5**	**8.1**	**11.2**	**10.5**	**6.2**	**6.5**	**10.0**

Industrial disputes

This section presents statistics of industrial disputes involving the loss of ten working days or more at the establishments where stoppages occurred. Industrial disputes data are obtained from employers (private and government), trade unions, and from reports of government authorities.

INDUSTRIAL DISPUTES: AUSTRALIA

Year	*Number of disputes*		*Employees involved ('000)*		*Working days lost ('000)*
	Commenced in year	*Total (a)*	*Newly involved (b)*	*Total (a)*	
1981	2,887	2,915	1,229.1	1,251.8	4,192.2
1982	2,045	2,060	691.3	722.9	2,158.0
1983	1,779	1,787	453.0	470.5	1,641.4
1984	1,958	1,965	551.1	560.3	1,307.4
1985	1,830	1,845	552.6	570.5	1,256.2
1986	1,680	1,687	673.9	691.7	1,390.7

(*a*) Refers to all disputes in progress during the year. (*b*) Comprises workers involved in disputes which commenced during the year and additional workers involved in disputes which continued from the previous year.

An industrial dispute is a withdrawal from work by a group of employees or a refusal by an employer (or a number of employers) to permit some or all employees to work, each withdrawal or refusal being made to enforce a demand, resist a demand, or to express a grievance. Employees involved include those directly and indirectly involved in disputes, with the indirectly involved being only those retrenched at establishments where stoppages have occurred but who are not party to the disputes. Working days lost refer to working days lost by workers directly or indirectly involved in disputes.

The annual figures contained in these tables relate to disputes *in progress*, while figures in the table on page 334 relate only to disputes which *ended* in the reference year.

INDUSTRIAL DISPUTES: WORKING DAYS LOST BY INDUSTRY
('000)

	Mining		*Manufacturing*					
Year	*Coal*	*Other*	*Metal products, machinery and equipment*	*Other*	*Construction*	*Transport and storage; Communication*	*Other industries (a)*	*All industries*
1981	318.3	307.4	1,221.6	654.1	441.9	465.5	783.3	4,192.2
1982	525.8	157.1	241.8	333.0	231.1	296.2	373.1	2,158.0
1983	122.8	194.7	157.6	120.7	337.2	213.6	494.8	1,641.4
1984	131.1	193.2	144.8	249.3	116.3	150.6	322.1	1,307.4
1985	233.8	106.4	107.3	189.4	175.3	180.4	263.7	1,256.2
1986	362.0	179.4	187.4	205.3	117.7	57.6	281.4	1,390.7

(*a*) Includes: agriculture, etc.; electricity, etc.; wholesale and retail trade; finance, etc.; public administration, etc.; community services; recreation and personal services.

INDUSTRIAL DISPUTES: WORKING DAYS LOST BY STATE
('000)

Year	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*Aust. (a)*
1981	1,918.6	1,235.5	465.8	158.8	244.0	64.3	4,192.2
1982	961.6	368.0	509.8	66.6	162.4	61.5	2,158.0
1983	801.2	257.7	135.0	87.7	270.6	67.8	1,641.4
1984	660.6	187.5	236.5	25.5	119.2	50.5	1,307.4
1985	398.7	355.9	336.2	22.5	92.9	20.7	1,256.2
1986	598.8	381.8	173.4	46.2	143.1	29.2	1,390.7

(*a*) Includes the Northern Territory and the Australian Capital Territory.

The following table shows the number of working days lost per thousand employees in the years 1981 to 1986. Prior to 1984 the figures were calculated using estimates from the Labour Force Survey. As from 1984, the basis for calculating working days lost per thousand employees changed to include estimates of employees from the Survey of Employment and Earnings. These estimates are combined with estimates of the number of employees in agriculture and in private households obtained from the Labour Force Survey to derive the denominator.

INDUSTRIAL DISPUTES: WORKING DAYS LOST PER THOUSAND EMPLOYEES BY INDUSTRY

	Mining		*Manufacturing*					
Year	*Coal*	*Other*	*Metal products, machinery and equipment*	*Other*	*Construction*	*Transport and storage; Communication*	*Other industries (a)*	*All industries (a)*
1981	10,302	5,238	2,287	986	1,405	1,116	238	798
1982	14,645	2,686	471	505	768	688	84	392
1983	3,223	3,375	353	186	1,269	485	42	249
1984	3,913	3,745	343	416	503	372	91	248
1985	6,898	1,931	255	312	666	432	71	228
1986	10,773	3,328	445	328	458	135	72	242

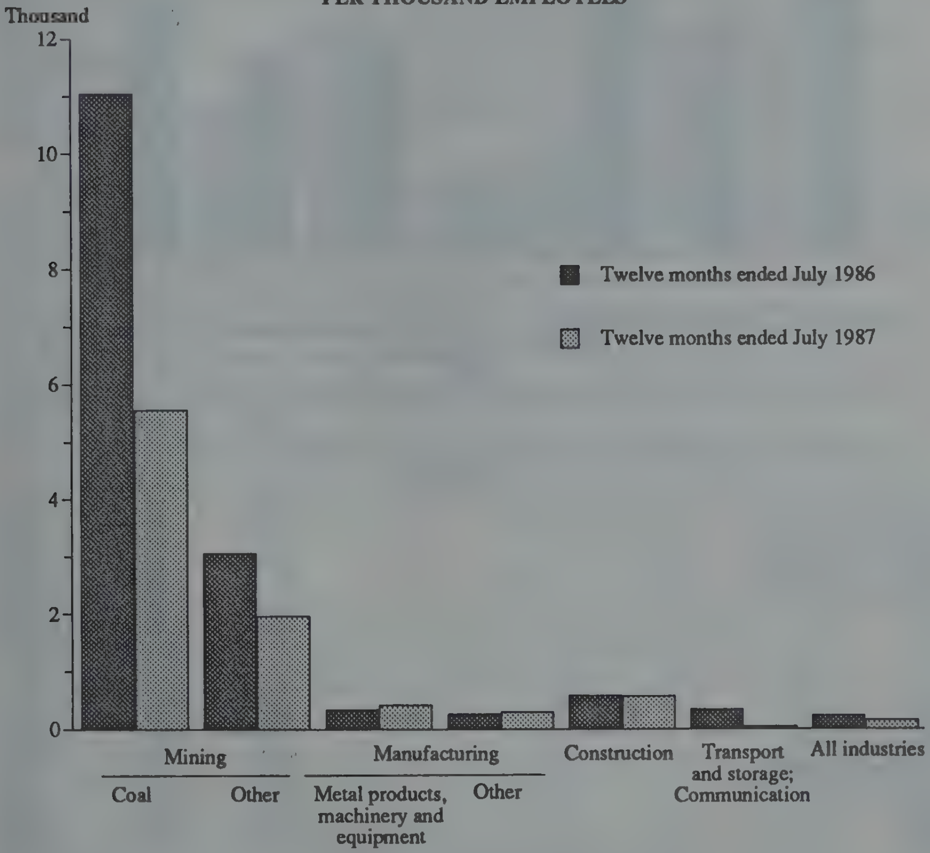
(*a*) Excludes agriculture, etc. and private households employing staff.

INDUSTRIAL DISPUTES: WORKING DAYS LOST PER THOUSAND EMPLOYEES *(a)* BY STATE

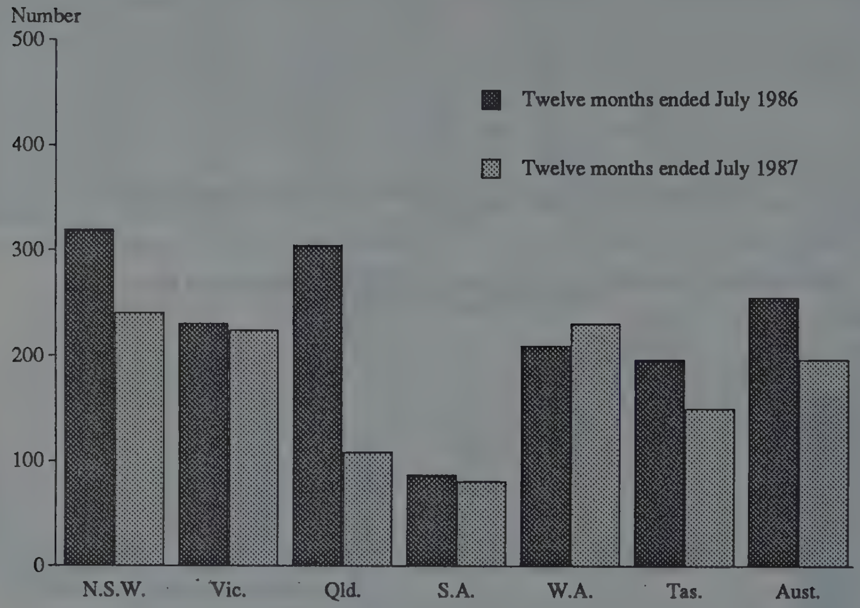
Year	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*Aust.(b)*
1981	1,024	863	620	320	548	461	798
1982	476	258	660	101	348	431	392
1983	287	163	176	115	577	478	249
1984	357	132	302	55	256	350	248
1985	209	236	411	47	187	138	228
1986	304	240	207	95	272	190	242

(*a*) Excludes agriculture, etc. and private households employing staff. (*b*) Includes the Northern Territory and the Australian Capital Territory.

INDUSTRIAL DISPUTES: BY INDUSTRY, AUSTRALIA, WORKING DAYS LOST PER THOUSAND EMPLOYEES



INDUSTRIAL DISPUTES: STATES AND AUSTRALIA, WORKING DAYS LOST PER THOUSAND EMPLOYEES



INDUSTRIAL DISPUTES: DURATION, CAUSES AND METHODS OF SETTLEMENT, WORKING DAYS LOST *(a)*

('000)

	1984	*1985*	*1986*
DURATION			
Up to 1 day	187.1	168.7	325.5
Over 1 to 2 days	194.6	213.8	137.0
Over 2 to less than 5 days	213.8	393.5	144.4
5 to less than 10 days	202.8	211.8	219.7
10 to less than 20 days	183.5	260.0	396.6
20 days and over	271.6	56.6	144.0
Total	**1,253.5**	**1,304.3**	**1,367.2**
CAUSES			
Wages	308.4	301.3	546.0
Hours of work	73.4	49.5	13.2
Managerial policy	407.0	321.2	499.6
Physical working conditions	204.1	193.6	93.9
Trade unionism	109.5	216.9	45.7
Other*(b)*	151.0	221.9	168.8
Total	**1,253.5**	**1,304.3**	**1,367.2**
METHODS OF SETTLEMENT*(c)*			
Negotiation	314.6	213.7	191.2
State legislation— Under State conciliation, etc., legislation Intervention, etc., of State Government officials	260.2	140.6	110.2
Federal and joint Federal State legislation*(d)*	80.9	190.8	575.6
Resumption without negotiation	585.9	736.4	472.8
Other methods*(e)*	12.0	22.8	17.4
Total	**1,253.5**	**1,304.3**	**1,367.2**

(a) Refers to disputes which ended in the year. *(b)* Includes 'Leave, pensions, compensation provisions, etc'. *(c)* Method directly responsible for ending the stoppage of work. *(d)* Includes Industrial Tribunals under (i) Conciliation and Arbitration Act, (ii) Coal Industry Acts, (iii) Stevedoring Act, (iv) Other Acts, and intervention, etc. of Federal Government officials. *(e)* Includes 'Mediation', 'Filling the places of workers on strike or locked out' and 'Closing down the establishment permanently'.

Trade unions

For the purpose of the following statistics a trade union is defined as an organisation, consisting predominantly of employees, whose principal activities include the negotiation of rates of pay and conditions of employment for its members. Returns showing membership by States and Territories each year are obtained for all trade unions and employee organisations.

TRADE UNIONS: NUMBER, MEMBERSHIP AND PROPORTION OF TOTAL EMPLOYEES

	Number of separate unions (a)	*Number of members ('000)*			*Proportion of total employees (per cent)*		
		Males	*Females*	*Persons*	*Males*	*Females*	*Persons*
31 December							
1981	324	2,029.4	964.7	2,994.1	60	48	56
1982	322	2,024.4	988.0	3,012.4	62	49	57
1983	319	2,007.2	978.0	2,985.2	61	46	55
1984	329	2,041.2	987.3	3,028.5	61	45	55
30 June							
1985(*b*)	323	2,121.6	1,032.6	3,154.2	63	47	57
1986	326	2,126.5	1,059.7	3,186.2	63	44	55

(*a*) Without interstate duplication. (*b*) Unions reported financial and total membership separately for the first time as at 30 June 1985.

In the table above the approximate percentages of wage and salary earners in employment who were members of trade unions are shown. The proportions of total employees shown have been calculated by using estimates of employees from the Labour Force Survey. The percentages shown should be regarded as giving only a broad indication of the extent of union membership among employed wage and salary earners because the degree of unemployment of reported union members will affect the percentages for a particular year and comparison over time. Such comparisons may also be affected by duplication in the count of members due to persons holding membership in more than one union, and by union perceptions and practices in regard to membership (e.g. membership may be restricted to 'financial' members only) which can change over time.

TRADE UNIONS: CLASSIFICATION ACCORDING TO NUMBER OF MEMBERS
30 JUNE 1986

	Separate unions		*Members*	
Number of members	*Number*	*Proportion of total (per cent)*	*Number ('000)*	*Proportion of total (per cent)*
Under 100	40	12.3	2.0	0.1
100 and under 250	40	12.3	6.6	0.2
250 " " 500	32	9.8	11.8	0.4
500 " " 1,000	43	13.2	31.1	1.0
1,000 " " 2,000	45	13.8	63.0	2.0
2,000 " " 5,000	39	12.0	130.1	4.1
5,000 " " 10,000	23	7.1	158.8	5.0
10,000 " " 20,000	19	5.8	275.0	8.6
20,000 " " 30,000	12	3.7	294.6	9.2
30,000 " " 40,000	7	2.1	251.3	7.9
40,000 " " 50,000	10	3.1	455.8	14.3
50,000 " " 80,000	8	2.5	529.4	16.6
80,000 and over	8	2.5	976.8	30.7
Total	**326**	**100.0**	**3,186.2**	**100.0**

In addition, a special Household Supplementary Survey was conducted from March to May 1982 to provide information on the characteristics of trade union members such as their age, industry, and occupation. Summary details were shown in *Year Book* No. 69.

Employment injuries

The only regular statistics concerning occupational health and safety collected by the ABS are the annual statistics of employment injuries which are published by all State Offices. In recent years, some improvements have been made to these statistics through the progressive adoption of standardised classifications and data items. However, in producing these statistics, the ABS has to rely upon administrative by-product data generated under the differing provisions of workers' compensation legislation in each State. Because of these legislative differences and coverage and reporting deficiencies of the by-product source data, and because comparable data for the Commonwealth employee sector are not available, the statistics do not provide an adequate picture of the nation's occupational safety and health record. Thus, users of the statistics are limited to State-specific data covering a variety of items such as type and duration of disability, industry of employment, occupation, age, sex, agency and type of accident, and nature and bodily location of injury.

The collection of statistics of occupational health and safety will undergo significant change in the future, following the Commonwealth Government's establishment of the National Occupational Health and Safety Commission (Worksafe Australia). This body has responsibility for the facilitation and co-ordination of action in collaboration with unions, business and State governments, aimed at improving working conditions and reducing the incidence and severity of injury and illness in the workplace. The overall objectives of Worksafe Australia include plans to develop and implement improved systems for the recording and collection of statistical and other information. To this end, Worksafe Australia released its report *National Data Set for Compensation-Based Statistics, April 1987*, which proposes the collection of a set of data items with associated concepts, classifications, etc., utilising the existing compensation systems administered by all State, Territory and federal agencies.

Employment and training programs

In order to ensure that its programs were appropriate to the current needs of the labour market, in 1983 the Commonwealth Government established the Committee of Inquiry in Labour Market Programs. As a result of that Committee's recommendations, the Government has restructured and rationalised its labour force programs. The resulting mix of programs is designed to promote work experience and training. The principal aims of the labour force programs are to maintain a supply of trained persons to meet the needs of industry and to assist disadvantaged groups in the labour market. Labour force programs operating in 1987 are detailed as follows.

Australian traineeship system—ATS

The ATS was introduced in August 1985 to achieve long-term fundamental improvements in training arrangements for young people who do not go on to higher education, technical or trade training. Traineeships are of at least 12 months duration and consist of a structured combination of on- and off-the-job training. Training includes a minimum of 13 weeks off-the-job training, usually provided by TAFE. Traineeships are primarily available for 16–18 year olds with preference given to those who do not have Year 12 qualifications.

The Commonwealth is responsible for the overall development and implementation of the ATS in close consultation with State and Territory governments, State Training Authorities, TAFE, employers, unions and young people. The Commonwealth provides:

- an on-the-job training fee of $1,000 per trainee to employers, $2,000 in the case of trainees assessed as disadvantaged;
- an off-the-job training fee of $1,800 per trainee which is paid to TAFE and $2,000 in the case of other approved off-the-job training providers;
- living away from home allowances to trainees who have to move in order to take up a traineeship.

The trainee is paid a trainee wage for the duration of the traineeship which is set with reference to relevant junior rates for the time spent on the job. The trainee wage can not be less than $99.30 per week and is adjusted in accordance with National Wage Case decisions.

In 1986–87, 7,085 young people commenced a traineeship and since the inception of the scheme over 10,500 traineeship positions have been created in a wide range of industries and occupations.

Industry training service

In addition to specific schemes directed at the training of individuals, the government also provides aid to assist industry to develop and improve its own training programs through the National Trainer Training Service and Industry Training Committees (ITCs).

ITCs are industry based autonomous committees with representatives from employers, employees and the government. Their role is to promote and develop systematic training and to provide advice on training issues in their industry.

Commonwealth rebate for apprentice full-time training—CRAFT

Assistance under CRAFT takes four forms. *Technical Education Rebates* are payable to employers for releasing their apprentices to attend, or study by correspondence, the technical education component of an approved basic trade course. As from 1 January 1987, these rebates range from $24.90 to $48.60 per day.

Rebates are also payable to employers who release their apprentices to attend approved full-time, *off-the-job* training courses at their own or other industry training centres and range from $24.90 to $35.50 per day.

A *Pre-Vocational Graduate Employment Rebate* is payable to employers who engage an apprentice who has completed an approved trade based pre-employment course which results in exemption from at least one stage of technical education and a reduction of at least 6 months in the normal period of apprenticeship. As from 1 January 1987 the rebate payable is $820.

A *Living Away From Home Allowance* is also provided to apprentices who need to move away from home to commence or maintain an apprenticeship. As from 1 January 1987, the allowance payable was $39.00 per week for first year apprentices, and $16.60 per week for second year apprentices.

Special Apprentice Training

Special Apprentice Training encompasses special apprenticeship support programs which are designed to complement traditional apprentice training and reduce wastage from apprenticeship.

Under the *Group Training Scheme*, joint Commonwealth/State financial assistance is provided to a central body, such as an employer organisation or a training company formed by local government or a regional organisation. Apprentices/trainees (under the Australian Traineeship System) are then indentured to/employed by these organisations and then leased on a rotation basis to participating employers.

The *Special Trade Training Program* is directed at developing new approaches to complement traditional apprentice training. The major component of this program is the provision of assistance to State and Territory governments to provide additional standard trade-based pre-employment courses and designated preparatory course places for women.

The *Special Assistance Program* is aimed at reducing the incidence of apprentice retrenchments and wastage. Wage subsidies may be payable to existing employers of indentured apprentices to retain the apprentice in employment and training or to new employers who engage and indenture out-of-trade apprentices who were retrenched due to the economic circumstances of their previous employer. In addition, out-of-trade apprentices may be eligible for a training allowance to enable the completion of the basic trade course and/or to undertake an approved course of off-the-job training.

Under the *Group One Year Apprentice Scheme* apprentices indentured to private employers receive full-time training using the spare training capacity within Commonwealth and State Government establishments for the first year of apprenticeship. At the end of the first year, the apprentices return to their employers in order to undertake the remainder of the apprenticeship.

The *Disabled Apprentice Wage Subsidy Program* provides a subsidy of $104.30 per week to employers who indenture a disabled person. Further assistance of up to $2,000 is available to employers to assist with any necessary modifications to the workplace.

Adult Training Program—ATP

The ATP provides short-term vocational training opportunities for people aged 21 and over who have been unemployed for at least 6 out of the past 9 months, or who are otherwise especially disadvantaged (e.g. disabled, sole parents, migrants with English language difficulties). The courses are developed at the local level in conjunction with TAFE and other training providers, taking into account the needs of the participants and the skill requirements of local labour markets.

TAFE has a major role in the delivery of courses. In 1986–87, courses were run in a wide range of areas, including office skills, tourism and hospitality, health care work, computer programming, industrial machining, welding, warehousing, and various rural occupations.

The program includes provision of training assistance targeted towards:

- sole parents and widows whose eligiblity for benefit/pension is changed by new provisions relating to age of youngest child;
- the provision of bridging and retraining courses to assist migrants obtain recognition in Australia for professional qualifications acquired overseas.

Skills Training Program—STP

The STP, established in 1987–88, focuses on the need to address skill shortages and improve Australia's workforce skills at both occupational and industry levels. It is designed to facilitate a broadening of the training infrastructure in Australia, particularly through fostering a greater training effort on the part of the private sector.

Under this program, the Federal Government has increased the level and range of support for industry and occupational skills training. Key elements of this expanded assistance are:

- packages of direct financial support to industry and firms to upgrade workforce skills to meet the requirements of structural and technological change;
- assisting with the development and expansion of industry skill centres, in conjunction with industry, TAFE and State governments;
- encouraging the development of innovative industry approaches to improved workforce training through the Industry Training Committee network.

Measures under this program are complementary to policies for increasing private sector involvement in the provision of training through TAFE.

Youth Training Program—YTP

The YTP, established in 1987–88, provides vocational training opportunities for long-term unemployed and other young job seekers under 21 years. The YTP is aimed at those who have been unemployed for at least 6 out of the past 9 months, or who are otherwise especially disadvantaged (e.g. disabled, sole parents, migrants with English language difficulties).

Courses are vocationally-oriented with the average duration around 13 weeks. They are developed in co-operation with TAFE or other training providers, and take account of the needs of the participants and the skill requirements of local labour markets. Particular attention is paid to the preparatory training needs of young people and structured training in job search skills are provided. Some of the training opportunities are provided through mainstream TAFE courses particularly for young people who have been unable to undertake training through apprenticeships or traineeships.

Job Search Training Program

The Job Search Training Program, also introduced in 1987–88, has two elements: Job Clubs and Job Search Training. They provide structured training in job search skills. Job Clubs provide intensive 3 week training courses in job search skills for jobseekers unemployed 6 months or more. Job Clubs operate on a group basis under the guidance and supervision of a trained leader.

Participants receive advice, training and supervised practice in résumé and application writing, job interviewing, and personal presentation—increasing the avenues for job hunting. Participants continue to receive their unemployment benefit or Job Search Allowance entitlement for the duration of the course.

Shorter-term Job Search Training opportunities are provided through 200 external organisations, such as community bodies, TAFE and CYSS projects.

Job creation and employment assistance programs

Community Employment Program—CEP

The CEP is aimed at providing relevant work experience for those most disadvantaged in the labour market, particularly the long-term unemployed. In addition, the program funds temporary jobs through projects of community benefit, with the view of enhancing participants' future employment prospects.

It was announced in the May 1987 Economic Statement that the CEP would be abolished: however projects approved in 1986–87 will be funded to completion and $100 million has been allocated for this purpose in 1987–88.

New Enterprise Incentive Scheme—NEIS

The NEIS provides assistance to unemployed people who have the capacity to establish and operate their own business. The Scheme operates as a joint Commonwealth–State program. The Commonwealth offers participants continued income support for an initial 12 month establishment period and training in small business management. State governments contribute capital loans and resources for assessment of business proposals, and provide business advice and counselling through their small business advisory services. The Commonwealth and State Government assistance provides a comprehensive support package for participants during the crucial establishment phase, increasing their opportunity to establish themselves successfully in permanent self-employment.

The Scheme is open to all unemployed people 18 years and above or their spouses who are in receipt of, or dependent on, Social Security income support. Married rate income support is available.

Jobstart

Jobstart is a general wage subsidy program which aims to:

- provide access to employment mainly in the private sector for job seekers who, because of long-term unemployment or other characteristics, are unable to compete on an equal basis in the labour market;
- enhance the employment prospects of job seekers through the provision of employment experience which will provide, improve or maintain their job-related skills, motivation and confidence;
- provide equitable assistance to disadvantaged groups having regard to the relative labour market needs of these groups.

The target group of Jobstart is people unemployed for at least six out of the last nine months, or job seekers who are otherwise especially disadvantaged in the labour market. These are Aboriginals, migrants with English language/cultural difficulties, people with disabilities, and sole supporting parents.

Jobstart provides private sector employers with subsidy payments for 26 weeks as an incentive to engage and improve the employment prospects of the target group. Subsidy rates are tied to age-earnings levels, with an additional incentive for those unemployed more than 12 months and for the especially disadvantaged groups.

Mobility Assistance

The Mobility Assistance Program aims to facilitate referral or placement of job seekers by providing financial assistance towards the costs incurred in pursuing or taking up suitable employment opportunities.

- The *Fares Assistance Scheme* (FAS) provides free travel on public transport for job seekers to attend job interviews for employment of a continuing nature. This ensures that those most in need of financial assistance are not disadvantaged in their search for employment by the cost of fares.
- The *Relocation Assistance Scheme* (RAS) provides financial assistance to meet the relocation expenses of job seekers who are unable to obtain continuing employment in their present locality and are prepared to move to a new area to take up a job that cannot be filled by suitable local job seekers.

  Assistance under RAS includes fares and expenses associated with moving a home and family.

Industry and Regional Employment Assistance

This program aims to:

- improve employment opportunities for individuals in nominated industries or regions adversely affected by structural change through the provision of employment and training assistance;

- improve the skills/employment base of industries/regions undergoing structural change.

There are six components, outlined below.

Heavy Engineering Adjustment and Development Program—HEADP

The Department of Education, Employment and Training is responsible for the labour adjustment component of the HEADP which comprises two elements:

- assistance for workers retrenched from industry to train, be placed in a subsidised job or relocated to another job;
- skills enhancement.

Financial assistance is provided to employers to upgrade the skills of existing employees, conditional upon improvements in work practices. Firms are required to accept greater responsibility for training on their own account.

The allocation for the labour adjustment component of HEADP is $24 million over the three years of operation of the program, effective from 1 July 1986.

The HEADP provides management efficiency, industrial development and marketing assistance plus a concessional loan finance scheme to provide incentives for investment. This part of the scheme is administered by the Department of Industry, Technology and Commerce.

Steel Regions Assistance Program—SRAP

This program was introduced in 1983–84 to reduce the impact of steel industry restructuring on the labour markets of the principal steel regions—the Hunter Valley, the Illawarra and Whyalla. The five-year program provides funds to diversify the employment bases of the three regions through enhancement of their economic infrastructure.

The administration of SRAP projects, including the management of funding, is diversified across various federal departments.

Assistance to Textile, Clothing and Footwear Industries—TCF

The Department is responsible for the employment and training component of the asssistance plan for the textiles, clothing and footwear industries. The retraining and re-employment package was introduced on 1 January 1988, fourteen months earlier than the start of the government's seven year Industry Plan on 1 March 1989.

A range of measures will be available to assist those workers seeking re-employment in jobs outside the textiles, clothing and footwear industries.

Christmas Island Retraining and Employment Assistance

As part of the government's overall policy on the future of Christmas Island, a range of training initiatives is being developed to assist those being retrenched in the phosphate mining industry and other unemployed Christmas Islanders. The initiatives commenced and under consideration include formal technical training in building and construction, and clerical and administrative areas; on-the-job training in similar occupational areas; community-based training programs aimed at meeting community needs while providing relevant skills training; and vocationally oriented English language training, both on the Island and on the mainland.

Coal Mining Industry Labour Adjustment Package

Retraining and relocation assistance is provided for workers retrenched from the coal mining industry in New South Wales and Queensland. This Adjustment Package, which is an integral part of restructuring arrangements directed at improving mine viability and securing the future of the industry, will replace assistance previously available to retrenched New South Wales coalminers under the general labour adjustment training arrangements.

Labour Adjustment Training Arrangements—LATA

Under general labour adjustment and training arrangements, the problems of workers affected by large-scale retrenchments in designated industries or areas (other than above) undergoing restructuring are addressed. LATA assistance is available to people who have been retrenched, made redundant, or who have resigned or retired voluntarily because of large scale retrenchments in industries or locations designated by the Minister. A range of flexible training options is directed towards improving the employment prospects of these workers by updating, upgrading, refreshing or broadening their skill base.

Community-based and Aboriginals programs

Community Youth Support Scheme—CYSS

The objectives of the CYSS are to help unemployed people aged 15–24 years obtain and retain employment or to proceed to further education or training by enabling local communities to develop programs of assistance which will develop the work and personal skills of local unemployed young people.

CYSS projects are administered by publicly elected local management committees which receive grants to assist with staffing, accommodation and administrative costs.

Community Training Program—CTP

Introduced in January 1986, the CTP aims to assist the most disadvantaged job seekers to develop and maintain their ability to obtain and retain employment, or to proceed to further education or training by supporting initiatives by community groups to provide structured programs of training, work experience and job placement and related services.

CTP has two components:

- *Locally-based Projects.* Legally incorporated, non-profit-making community organisations, or in some cases local government authorities, are offered grants to conduct programs providing combinations of vocational training relevant to local labour market needs, work experience placements, personal support services and job placement and referral services.
- *Information Technology Centres (ITeCs).* The ITeCs offer training in electronics, electronic office skills and computer applications. The Centres also provide community access programs in information technology, and establish and support new enterprise development in the information technology based industries and in industries using information technology.

  Local industries are encouraged to be involved in the development and operation of ITeCs, and 50 per cent of the costs must be contributed from sources other than government.

Community Volunteer Program—CVP

Announced in March 1987, the CVP aims to assist unemployed people, particularly the young unemployed, to improve their labour market prospects and enhance their personal skills by participating in voluntary activities of benefit to the community.

Volunteer Referral Agencies (VRAs) are designed to place unemployed volunteers in voluntary activities which match their skills, interests and/or career preferences. VRAs may be sponsored by incorporated community organisations, local governments, service clubs and business enterprises.

Aboriginal Employment and Training

The objectives of this sub-program are to:

- increase the overall level of employment among Aboriginals and to increase the range of occupations in which they are employed through the provision of training assistance to enable the development of work skills;
- promote increased awareness in the business sector and the community of Aboriginal employment issues;
- provide, in rural and remote areas, training and employment support directed at the enterprise and economic development of Aboriginal communities.

These are sought through implementation of the following component programs:

- *Training for Aboriginals Program* (TAP), which aims to improve training and employment opportunities for Aboriginal people by providing work experience, on-the-job training and/or, formal training. While the major priority for TAP is training for jobs in the private sector, it also provides assistance to public sector agencies for Aboriginal recruitment and training strategies.
- *Enterprise Employment Assistance Program* (EEA) which provides wage subsidy support to certain Aboriginal enterprises, for management training assistance to rural and remote community enterprises and community development projects.
- *Aboriginal Employment Action Program* which will provide flexible assistance to encourage better recruitment practices in major national companies.

Allowances

To assist disadvantaged job seekers to undertake training or re-training, the Formal Training Allowance (FTA) is made available. These are to support living and other costs during course participation and are payable to eligible people participating in the formal training programs, which are:

- Adult Training Program;
- Youth Training Program;
- Community Training Program;
- Training for Aboriginals Program;
- elements of Special Apprenticeship Training;
- training elements of New Enterprise Incentive Scheme.

To be eligible to receive FTA, people are generally unemployed for at least six months in the last nine or are otherwise especially disadvantaged in the labour market. FTA consists of:

- a living component equivalent to the total Unemployment Benefit/Job Search Allowance entitlement of the trainee;
- a training component of $30 for those aged 21 and above;
- a Living-Away-From-Home Allowance (LAFHA) for people who need to move to undertake training, and a Home Base Maintenance Allowance for trainees on LAFHA who also maintain a home base.

LABOUR MARKET PROGRAMS AND SERVICES EXPENDITURE
($'000)

Type of program	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*	*1986–87*
Training Programs—						
Vocational Training for Young People—						
Australian Traineeship System	—	—	—	—	2,087	13,565
Formal Training Assistance for Youth	8,423	11,365	14,564	16,121	14,854	(*a*)13,615
Experimental Training Projects	—	948	1,034	1,807	664	(*a*)1,720
Trade Training—						
CRAFT	78,749	84,938	86,603	99,362	88,075	96,252
Special Apprenticeship Training	4,506	12,397	23,323	21,865	20,213	18,860
Adult Training (*b*)						
Adult Training Program—						
General Skills Training	—	—	—	—	4,917	18,455
National Skills Shortages	—	—	—	—	1,061	4,308
Labour Adjustment Training	(*c*)	(*c*)	11,223	9,670	4,616	(*d*)2,064
Skills in Demand	(*e*)2,482	(*e*)3,606	2,068	3,092	(*f*)3,419	—
General Training Assistance—						
Formal	2,751	3,306	3,746	4,473	(*g*)3,661	—
On-the-job	5,522	2,692	1,842	848	(*g*)739	—
Former Regular Service Members' Vocational Training Scheme	196	74	31	11	10	—
Formal (Disabled)	615	807	1,120	476	(*g*)488	—
Industry Training Services	4,500	5,222	6,943	8,649	11,716	12,711
Job Creation and Employment Assistance—						
Job Creation—						
Community Employment Program	—	—	285,422	405,543	289,925	(*h*)198,981
Wage Pause Program(*i*)	—	98,900	101,100	—	—	—
Employment Incentives—						
JOBSTART—						
Private Sector	—	—	—	—	(*j*)18,787	113,972
CWEP.	—	—	—	—	(*k*)	10,393
Work Experience (SYETP)	53,702	63,625	120,192	97,673	(*l*)61,714	—
Adult Wage Subsidy Scheme	—	375	23,200	35,134	(*l*)25,432	—
Special Needs Clients	1,007	751	1,938	2,333	(*l*)1,763	—
Disabled On-the-Job	4,792	4,068	7,161	9,234	(*l*)7,146	—
Mobility Assistance—						
Relocation Assistance Scheme	1,599	2,160	3,497	3,016	2,629	3,334
Fares Assistance Scheme	264	362	416	451	501	665

LABOUR MARKET PROGRAMS AND SERVICES EXPENDITURE—*continued* ($'000)

Type of program	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*	*1986–87*
Industry & Regional Employment Assistance—						
Assistance to the Steel Regions	—	—	—	3,198	894	8,979
Christmas Island Retraining & Employment Assistance	—	—	—	—	—	763
Heavy Engineering Adjustment & Development	—	—	—	—	—	122
Community Based and Aboriginal Program—						
Community Youth Support Scheme	14,200	17,880	21,348	26,056	31,540	35,092
Community Training Program—						
Community Youth Special Projects	586	1,499	2,794	3,342	4,586	(*m*)
Work Preparation Program	1,064	1,437	1,506	2,594	2,473	(*m*)
Locally Based Projects	—	—	—	—	935	14,181
Information Technology Centres	—	—	—	—	354	935
Community Volunteer Program—	—	—	—	—	—	1,801
Volunteer Youth Program	151	178	392	529	816	(*n*)
Aboriginal Employment & Training	19,044	24,610	41,040	53,356	58,477	63,232
Placement and Information Services—						
Occupational Information	1,211	1,627	2,402	2,883	2,600	(*o*)
Employment Services—						
National Promotional Campaigns	124	962	(*q*)2,477	2,200	(*o*)	(*o*)
Employment Strategies	290	512	(*s*)	(*s*)	(*o*)	(*o*)
Total expenditure	**205,778**	**344,301**	**767,382**	**813,916**	**667,093**	**634,000**

Source: Department of Education, Employment and Training

(*a*) Will be subsumed under Youth Training Program in 1987–88. (*b*) Expenditure in 1985–86 relates to approvals in the period 1 January 1986 to 30 June 1986. This program replaced General Training Assistance, Skills in Demand and the formal elements of Special Training for Disabled. (*c*) Expenditure included under Skills in Demand. (*d*) In 1986–87, this element formed part of the Adult Training Program; in 1987–88 it will form part of Industry and Regional Employment Assistance. (*e*) Includes Lata expenditure. (*f*) Expenditure relates to approvals on Skills in Demand projects approved prior to 1 January 1986. This program was then replaced by the National Skills element of the Adult Training Program. (*g*) Expenditure relates to approvals to 31 December 1985, when this program was then replaced by the Adult Training Program. (*h*) This amount includes expenditure on the New Enterprise Incentive Scheme, which operated as a pilot program under the Community Employment Program. (*i*) Funds were appropriated to the Department of Finance. (*j*) Expenditure relates to approvals in the period 1 December 1985 to 30 June 1986. This scheme replaced private sector assistance for Work Experience, Adult Wage Subsidy Scheme, Special Needs Job Seekers and Disabled On-the-Job. (*k*) From 2 December 1985, Commonwealth SYETP became the CWEP element of JOBSTART. Expenditure under these elements in 1985–86 is included in the figure for SYETP. (*l*) Expenditure relates to approvals to 30 November 1985 (except in the case of Commonwealth SYETP where expenditure refers to approvals to 30 June 1986). This program was then replaced by JOBSTART. (*m*) In 1986–87, these elements form part of Locally Based Projects. (*n*) In 1986–87, expenditure on existing VYP projects is included under the new Community Volunteer Program. (*o*) This item is included in the Department's administrative expenditure. (*q*) Includes expenditure on Employment Strategies. (*s*) Included under National Promotional Campaigns since 1983–84.

LABOUR MARKET PROGRAMS AND SERVICES APPROVALS(*a*)

Type of program	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*	*1986–87*
Training Programs—						
Vocational Training for Young People—						
Australian Traineeships System	—	—	—	—	1,000	7,085
Formal Training Assistance for Youth	11,456	14,069	15,204	15,246	11,845	(*b*)9,800
Experimental Training Projects	—	150	369	630	387	(*b*)330
Trade Training Program—						
CRAFT	99,000	100,577	81,986	80,300	75,600	89,709
Special Apprentice Training	4,636	12,063	14,537	11,514	(*c*)10,202	(*c*)5,406
Adult Training and Retraining—						
Adult Training Program(*d*)	—	—	—	—	3,090	7,000
Labour Adjustment Training	—	(*e*)	3,701	2,765	733	(*f*)190
Skills in Demand	1,213	(*g*)1,615	426	553	(*h*)818	—
General Training Assistance—						
Formal	1,086	1,656	1,521	1,766	(*i*)1,331	—
On-the-job	7,320	3,526	1,832	1,237	(*i*)640	—
Formal (Disabled)	94	111	93	136	(*i*)39	—

LABOUR MARKET PROGRAMS AND SERVICES APPROVALS(*a*)—*continued*

Type of program	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*	*1986–87*
Job Creation and Employment Assistance—						
Job Creation—						
Community Employment Program(*j*)	—	—	30,450	46,670	37,019	(*k*)21,400
Wage Pause Program(*l*)	—	3,532	17,129	—	—	—
Employment Incentives—						
JOBSTART—						
Private Sector	—	—	—	—	(*m*)35,098	64,860
CWEP(*n*)	—	—	—	—	—	2,080
Work Experience—						
Standard SYETP						
Private	37,525	45,129	50,718	39,893	(*o*)16,362	—
Commonwealth	3,589	4,233	4,621	4,598	3,558	—
State	—	567	789	—	—	—
Extended SYETP	10,582	16,337	31,454	24,383	(*o*)10,187	—
Adult Wage Subsidy Scheme—						
Standard	—	1,360	13,074	11,943	(*o*)5,393	—
Extended	—	282	2,279	2,395	(*o*)1,134	—
Special Needs Jobseekers	915	1,012	2,097	2,190	(*o*)1,237	—
Disabled On-the-job	3,235	2,719	4,140	4,643	(*o*)2,518	—
Mobility Assistance—						
Relocation Assistance Scheme	1,513	1,985	2,790	2,290	1,749	2,480
Community Based and Aboriginal Program—						
Community Youth Support Scheme(*q*)	55,000	65,000	70,000	75,000	85,000	100,000
Community Training Program—						
Community Youth Special Projects(*t*)	n.a.	n.a.	956	1,202	1,331	(*s*)
Work Preparation Program (Disabled)	447	376	460	482	557	(*s*)
Locally Based Projects	—	—	—	—	38	4,350
Information Technology Centres	—	—	—	—	—	150
Community Volunteer Program—	—	—	—	—	—	7,000
Volunteer Youth Program(*u*)	1,031	1,600	2,200	3,500	4,100	—
Aboriginal Employment and Training	4,533	5,594	9,162	9,998	10,173	11,426
Total all programs	**243,175**	**283,493**	**361,988**	**343,334**	**321,139**	**333,266**

Source: Department of Education, Employment and Training

(*a*) An approval is defined as a person who was approved for, and commenced under, a specific program, for which financial assistance was available. An approval is registered each time an individual commences in a different component of a program, or in different programs, i.e. the total number of approvals can be greater than the number of individuals commencing in any one year. In some programs, the number of training or course places to be funded or job placements/commencements (CEP) are used instead of approvals. These have been included as approvals, given the explanation above. It should be noted that the total number *assisted* under any program in a financial year exceeds the number of approvals, owing to a carry-over between financial years. (*b*) Will be subsumed under Youth Training Program in 1987–88. (*c*) The lower figure in 1986–87 reflects the decision to discontinue the Pre-Apprenticeship Allowance from 1 January 1987. (*d*) This program replaced General Training Assistance, Skills in Demand and the formal elements of Special Training for Disabled. Approvals for General Skills Training and National Skills Shortages in 1985–86 relate to the period 1 January 1986 to 30 June 1986. (*e*) Approvals included under Skills in Demand. (*f*) In 1986–87, this element formed part of General Skills Training; in 1987–88 it will form part of Industry and Regional Employment Assistance. (*g*) Figure includes LATA approvals for 1982–83. (*h*) Approvals relate to Skills in Demand projects approved prior to 1 January 1986. This program was then replaced by the National Skills Element of the Adult Training Program. (*i*) Approvals relate to the period 1 July 1985 to 31 December 1985. This program was then replaced by the General Skills Training element of the Adult Training Program. (*j*) It should be noted that the CEP figures represent placements made in each financial year regardless of the year of project approval. (*k*) This figures includes 400 people assisted under the New Enterprise Incentive Scheme. (*l*) Funds for this program were appropriated to the Department of Finance, but the program was administered by the State and Territory governments in consultation with the Department of Employment and Industrial Relations. Figures refer to placements recorded by the CES. It should be noted that not all placement activity occurred through the CES. (*m*) Approvals relate to the period 1 December 1985 to 30 June 1986. This Scheme replaced the private sector assistance for Work Experience, Adult Wage Subsidy Scheme, Special Needs Job Seekers and Disabled On-the-Job. (*n*) From 2 December 1985, Commonwealth SYETP became the CWEP element of JOBSTART. Total approvals for these elements in 1985–86 are shown against Commonwealth SYETP. Figures for 1986–87 are shown against CWEP. (*o*) Approvals relate to the period 1 July 1985 to 30 November 1985. This program was then replaced by JOBSTART. (*q*) No formal approval is required to attend CYSS projects. The figures provided are only broad Departmental estimates of people who attended projects, and are based on monthly reports of the number of people who attended projects. (*s*) In 1986–87, these elements form part of Locally Based Projects. (*t*) The trainee allowance under Community Youth Special Projects (CYSP) was payable only to participants in projects which provided full-time courses. Participants in other CYSP projects retained eligibility for unemployment benefit and so were not included in this table. (*u*) Figures relate to young people involved in voluntary activities. In 1986–87, the Volunteer Youth Program was incorporated in the new Community Volunteer Program.

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CHAPTER EIGHT

SOCIAL SECURITY AND WELFARE

The Commonwealth Government, the State governments and voluntary welfare organisations all provide social welfare services. This chapter concentrates on the benefits and services provided by the Commonwealth Government, principally those of the Departments of Social Security, Community Services and Health and Veterans' Affairs but mention is also made of the services provided by the Departments of Aboriginal Affairs, and Immigration, Local Government and Ethnic Affairs. Also included is a section relating to Income Distribution surveys which provides a summary of the distribution of money income across the Australian population.

Further, details of services administered by the Commonwealth Department of Community Services and Health are given in Chapter 9, Health. Details of pension and superannuation schemes for government and semi-government employees, mine workers, parliamentarians and employees of private business are included in Chapter 23, Private Finance.

A history of pensions in Australia is provided in a special article included at the end of the chapter.

Commonwealth Government expenditure on social security services

This section deals with various government payments for the relief of aged, infirm, widowed persons, sole parents, the orphaned and the unemployed, assistance to families, etc. On 1 July 1947, with the passage of the *Social Services Consolidation Act 1947*, all Acts providing social service benefits were amalgamated. The Act is at present styled the *Social Security Act 1947*.

The main social security payments provided by the Commonwealth Government under the Social Security Act, as at June 1987, and the date on which each came into operation, are shown below.

Age pension	1 July 1909
Invalid pension	15 December 1910
Family allowance	1 July 1941
Widow's pension	30 June 1942
Funeral benefit	1 April 1943
Unemployment benefit	1 July 1945
Sickness benefit	1 July 1945
Special benefit	1 July 1945
Allowances associated with the Commonwealth Rehabilitation Service (including Rehabilitation allowance)	10 December 1948
Sheltered employment allowance	30 June 1967
Wife's pension (superseded wife's allowance)	5 October 1972
Supporting parent's benefit (female)	3 July 1973
Double orphans' pension	26 September 1973
Handicapped child's allowance	30 December 1974
Supporting parent's benefit (male)	10 November 1977
Rehabilitation allowance	1 March 1983
Mobility allowance	1 April 1983
Family income supplement	1 May 1983
Carer's pension (subsumed spouse carer's pension)	1 November 1985

Details of the respective rates of pensions and benefits and details of associated allowances available to certain recipients are shown, along with more specific eligibility criteria, in the Annual Report of the Department of Social Security.

Age and invalid pensions and associated payments

Age pension is payable to men and women who have reached the ages of 65 and 60 respectively. Age pension is generally subject to residence qualifications, an income test and an assets test.

Invalid pension is payable to persons between sixteen years of age and of age pension age who are permanently incapacitated for work to the extent of at least 85 per cent, or permanently blind. Invalid pension is paid subject to residence qualifications, an income test and an assets test. Pensions paid to the permanently blind are not subject to income and asset tests.

Sheltered employment allowance is payable to disabled people who are employed in approved sheltered employment services and are otherwise qualified to receive an invalid pension or would become so qualified if they ceased to be provided with sheltered employment. The allowance is subject to the same income and assets test as applies to the invalid pension and is paid at the same rate. It is payable in the form of a supplement to the sheltered employee's wages.

Rehabilitation allowance is payable to people (except single persons under 16 years) who receive assistance through the Commonwealth Rehabilitation Service, and who would otherwise be eligible to receive a social security payment. It is subject to the same income and assets tests as the invalid pension, and similar additional benefits are available.

A wife's pension is payable to the wife of an age or invalid pensioner when she is not entitled, in her own right, to an age or invalid pension or rehabilitation allowance. A person receiving sheltered employment allowance (and in certain circumstances, a rehabilitation allowance) does not receive a wife's pension as such, but an equivalent payment is made. There is no residence qualification, but an income or assets test applies.

A carer's pension is payable to a person providing constant care and attention for a severely disabled age or invalid pensioner who is a spouse or near relative, where the carer is not eligible for a pension in his/her own right.

Additional pension is payable for each dependent child under 16 years and dependent full-time students aged 16 to 24 years, subject to the income test. Widowed or other unmarried age or invalid pensioners with a dependent child may, in addition, receive a guardian's allowance. Rent assistance, subject to a special income test, is available to pensioners if they pay rent or pay for board or lodging. All recipients of sheltered employment allowance and certain others receive a means test free incentive allowance in lieu of rent assistance. Remote area allowance is payable to pensioners living in certain remote areas, except for those aged 70 years or more receiving the special rate of age pension.

AGE PENSIONERS: 30 JUNE

Age	*1985*	*1986*	*1987*
60–64 years	167,250	163,841	161,355
65–69 years	303,105	298,270	297,113
70–74 years	345,205	336,506	325,983
75 years and over	516,222	525,983	537,503
Total	**1,331,782**	**1,324,600**	**1,321,954**
Number of wife's/carer's pensioners (*a*)	23,558	24,183	24,770
		—$'000—	
Total payments during year	5,638,926	5,897,156	6,257,148

INVALID PENSIONERS: 30 JUNE

Age	*1985*	*1986*	*1987*
16–19 years	7,409	7,464	7,768
20–39 years	56,176	58,414	60,114
40–59 years	141,725	149,497	156,893
60 years and over	53,852	58,435	64,385
Total	**259,162**	**273,810**	**289,160**
Number of wife's/carer's pensioners (*a*)	75,855	83,212	90,202
		—$'000—	
Total payments during year	1,469,772	1,673,523	1,912,167

(*a*) Includes allowances, rent assistance and wives pensions where applicable.

At 30 June 1987, 186 sheltered employment services were paying the allowance to 10,559 disabled employees. Expenditure during the year 1986–87 was $63.9 million.

At 30 June 1987, there were 2,887 persons in receipt of rehabilitation allowances. Expenditure during the year 1986–87 was $25.4 million.

Widows' pensions and associated payments

There are three categories of widow pensioners:

Class 'A'. A widow who has one or more qualifying children under the age of sixteen years or dependent full-time students aged 16 to 24.

Class 'B'. A widow who, because she has no qualifying children or students in her custody, care and control, is not eligible for a Class 'A' widow's pension but is either at least 50 years of age or, after having reached the age of 45, has ceased to receive a Class 'A' pension by reason of ceasing to have a qualifying child or student.

Class 'C'. A widow not eligible for Class 'A' or Class 'B' widow's pension, who is under 50 years of age and is in necessitous circumstances in the 26 weeks following her husband's death.

A widow's pension is income and assets tested and is not payable to a woman receiving an age or invalid pension, a supporting parent's benefit, an unemployment, sickness or special benefit, a sheltered employment allowance, or a war widow's pension.

In addition to the basic pension, a mother's/guardian's allowance and additional pension for each dependent child are payable in the case of a widow with children. Rent assistance is also available to widows if they pay rent or pay for board or lodging. Remote area allowance is payable to widows living in certain remote areas.

WIDOW PENSIONERS, BY AGE: 30 JUNE

Age	*1985*	*1986*	*1987*
Class A widow pensioners aged—			
Under 20 years	49	50	57
20–29 years	8,942	7,880	6,917
30–39 years	34,434	32,424	29,832
40–49 years	25,609	25,199	24,849
50–59 years	9,064	8,450	8,011
60 years and over	180	177	186
Class B widow pensioners aged—			
45–49 years	3,887	4,111	4,298
50–54 years	20,110	19,843	20,184
55–59 years	39,035	38,374	37,870
60 years and over	18,509	19,013	19,764
Class C widow pensioners	96	102	136
Total	**159,915**	**155,623**	**152,104**
		—$'000—	
Total payments during year (*a*)	889,380	924,517	952,652

(*a*) Includes payment to benevolent homes for maintenance of pensioners. It also includes rent assistance and allowances.

Supporting parent's benefit and associated payments

Supporting parent's benefit was introduced in November 1977 to extend to supporting fathers the same benefit that had previously been available to supporting mothers through supporting mother's benefit. The benefit is available to sole parents who have a child under 16 years or a dependent full-time student aged 16 to 24 years. It is subject to an income and an assets test. Additional payments are the same as for the widow's pension.

SUPPORTING PARENTS, BY AGE AND TYPE: 30 JUNE

Age and type of beneficiary	*1985*	*1986*	*1987*
Age—			
Under 20 years	9,971	9,968	9,693
20–29 years	76,332	79,164	78,844
30–39 years	57,968	62,311	64,115
40–49 years	19,584	21,000	22,330
50–59 years	3,926	4,043	3,967
60 years and over	236	244	234

SUPPORTING PARENTS, BY AGE AND TYPE: 30 JUNE—*continued*

Age and type of beneficiary	*1985*	*1986*	*1987*
Type of beneficiary—			
Females—			
Unmarried mothers	44,104	45,385	45,025
Separated wives	94,931	102,184	106,134
Separated de facto wives	19,246	19,091	17,773
Males—			
Widowers	1,140	1,159	1,036
Divorcees	1,502	1,485	1,401
Separated husbands	5,555	5,929	6,418
Separated de facto husbands	1,349	1,242	1,057
Other	190	255	339
Number of beneficiaries	168,017	176,730	179,183
		—$'000—	
Total payments during year (*a*)	1,066,197	1,237,959	1,366,717

(*a*) Includes rent assistance and allowances.

Unemployment, sickness and special benefits and associated payments

Unemployment and sickness benefits are paid to men over 16 and under 65 years of age, and to women over 16 and under 60 years of age, who are unemployed or temporarily incapacitated for work. They must have been living in Australia during the preceding twelve months or be likely to remain permanently in Australia. Both benefits are subject to an income test. A person cannot receive both benefits simultaneously, nor can a person receive either benefit at the same time as an invalid, widow's, service pension or supporting parent's benefit.

For unemployment benefit purposes, people must establish that they are unemployed, that their unemployment is not due to industrial action by themselves or by members of a union of which they are a member, that they are capable and willing to undertake suitable work, and that they have taken reasonable steps to obtain such work. Registration for employment with the Commonwealth Employment Service is necessary. For sickness benefit purposes, people must establish that they are temporarily incapacitated for work because of sickness or injury and that they have thereby suffered a loss of salary, wages or other income.

A special benefit may be granted to persons not qualified for unemployment or sickness benefit who are not eligible for any pension, and who, because of age, physical or mental disability or domestic circumstances, or any other reason, are unable to earn a sufficient livelihood for themselves and their dependants. Recipients of special benefits include, among others, persons ineligible for a pension or benefit because of lack of residence qualifications and migrants in government accommodation centres awaiting their first employment in Australia.

The benefit is designed to meet cases of special need and may also be paid as income support over a period if no other social security benefit is payable. The rate paid may not exceed the rate of unemployment or sickness benefit.

All beneficiaries with dependent children are eligible for an additional benefit for each dependent child. In addition, sole parents are eligible for mother's/guardian's allowance. After the benefit has been paid for six consecutive weeks a sickness beneficiary who is paying rent or is paying for board or lodging may be entitled to rent assistance. This assistance is available to unemployment or special beneficiaries who have been in receipt of benefit, generally for a continuous period of 26 weeks, if they are married, single with dependent children, single aged 25 years or more, or single aged 18 to 24 years and are living with a parent or guardian. A young homeless allowance is available to unemployment, sickness and special beneficiaries under 18 years, who are homeless and without parental or custodial support.

UNEMPLOYMENT, SICKNESS AND SPECIAL BENEFITS: YEAR ENDED 30 JUNE

	1985	*1986*	*1987*
Unemployment beneficiaries—			
Number of benefits granted	860,481	811,799	872,866
Number on benefit at end of year	561,400	569,761	550,850
Average number on benefit at end of each week during year	581,720	559,237	574,385
Sickness beneficiaries—			
Number of benefits granted	141,277	143,164	154,430
Number on benefit at end of year	63,004	65,301	70,261
Average number on benefit at end of each week during year	62,420	63,481	67,748
Special benefit beneficiaries—			
Number of benefits granted	98,812	98,044	96,325
Number on benefit at end of year	18,925	18,579	19,875
Average number on benefit at end of each week during year	18,478	18,302	19,158
Amount paid during year(*a*)—		—$'000—	
Unemployment	2,983,605	3,122,120	3,453,802
Sickness	364,628	391,820	429,368
Special benefit	100,282	108,131	124,607

(*a*) Includes additional allowances.

Fringe benefits

The Commonwealth Government makes several non-cash 'fringe benefits' available to pensioners and recipients of supporting parent's and sickness benefits, and their dependants, who are entitled to a Pensioner Health Benefits (PHB) card or, in the case of sickness beneficiaries, a Health Benefits (HB) card. The issue of a PHB card is subject to a special income test. The benefits include:

- a range of free pharmaceuticals;
- a one-third reduction in telephone rental (subject to the income of co-residents);
- reduced fares for Commonwealth Government railway services;
- postal redirection concessions;
- free hearing aids services.

State and Territory governments, local government authorities and private organisations also provide certain fringe benefits. The most valuable of these are reductions in local government rates and in public transport charges.

There were 1,767,058 pensioners at 30 June 1987 with PHB cards entitling them to Commonwealth pensioner fringe benefits.

The majority of unemployment and special beneficiaries, other persons on low income and certain others, receive a Health Care card entitling them to a range of pharmaceuticals at a concessional rate. This concession is also available to pensioners whose income and assets exceed the qualifying limits for fringe benefits.

Family allowances

A family allowance is paid free of means test to a person with children under 16 years and in certain circumstances with full-time students aged 16 to 24 years who are wholly or substantially dependent on that person. An additional allowance is payable in respect of multiple (three or more) births until the children turn six years. Family allowance is not paid for students receiving AUSTUDY or certain other Commonwealth education allowances. Payment is usually made to the mother. Approved charitable, religious or government institutions are paid family allowance for children in their care.

Generally, to be granted an allowance the person and the child must be in Australia and be Australian citizens, or intend to remain in Australia permanently. If neither of these conditions is met, the allowance is payable after the claimant and child have been resident in Australia for 12 months immediately preceding lodgement of the claim. Under certain conditions, family allowance may be paid to Australians who are temporarily absent overseas.

FAMILY ALLOWANCES: 30 JUNE 1987

Number of children and students in family	*Number of families*								
	N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Total(a)*
1	277,276	205,129	131,794	69,323	74,016	22,732	9,187	15,362	804,819
2	285,850	218,761	138,949	73,942	81,711	24,005	8,600	16,994	848,812
3	121,162	92,954	61,898	26,542	34,183	10,372	3,974	7,274	358,359
4	33,386	24,625	18,092	6,190	8,703	2,762	1,439	1,796	96,993
5	6,887	4,826	4,133	1,139	1,715	573	471	362	20,106
6	1,885	1,196	1,095	281	464	129	159	93	5,302
7	519	355	357	68	132	31	53	27	1,542
8	163	108	109	24	36	11	20	8	479
9	56	56	37	6	11	3	6	2	177
10 or more	23	23	22	2	6	—	2	1	79
Total families	**727,207**	**548,033**	**356,486**	**177,517**	**200,977**	**60,618**	**23,911**	**41,919**	**2,136,668**
No. of children in families	1,397,427	1,055,413	698,927	329,717	387,531	116,877	47,979	81,005	4,114,876
No. of children in approved institutions	4,986	1,325	2,673	238	829	134	51	47	10,283
					—$'000—				
Amount paid during year	496,780	355,773	234,922	124,909	129,138	39,463	(*a*)	(*a*)	1,381,022

(*a*) Expenditure for N.T. and A.C.T. included in expenditure for S.A. and N.S.W. respectively

Family income supplement

Family income supplement is paid subject to an income test to low-income families with one or more children eligible for family allowance so long as they are not in receipt of any Commonwealth pension, benefit or allowance which provides additional payment for dependent children, and so long as the children of these families are not receiving means-tested Commonwealth payments. The number of families in receipt of family income supplement at 30 June 1987 was 32,803. The amount paid during the year 1986–87 was $60,560,000.

Handicapped child's allowance

Parents or guardians of a child under 16 years or a dependent full-time student who is severely disabled mentally and/or physically, is living in the home, and needs constant care and attention, are entitled to a handicapped child's allowance. The allowance is not subject to an income test, but a residence qualification similar to that for family allowance applies. The allowance is also available to persons on low incomes who are caring for a substantially disabled child and are suffering severe financial hardship as a result of expenditure associated with the child's disability. The number of handicapped child's allowances being paid at 30 June 1987 was 31,061. The total amount paid through these allowances during the year 1986–87 was $29.1 million.

Double orphans' pension

Double orphans' pension is payable free of means test with respect to children under 16 years, or dependent full-time students under 25 years, whose parents are both dead or one parent is dead and the other is not available to care for the child. The family allowance residence test applies. The pension may also be paid with respect to a refugee child whose parents are both outside Australia, or their whereabouts is unknown.

Mobility allowance

Mobility allowance is a payment, free of means test, for disabled people unable to use public transport without assistance who are employed or undertaking vocational training.

Funeral benefit

This benefit is a small lump sum payment to assist in meeting the costs of funerals of deceased pensioners or their dependants.

Special temporary allowance

On the death of one of a married pensioner couple, the surviving pensioner is entitled to receive the equivalent of twelve weeks combined pension payments.

Portability of social service payment

Age, invalid and widows' pensions and supporting parent's benefits continue in force for recipients who have left Australia unless they left before 8 May 1973 or their pension or benefit is subject to the provisions of either of the reciprocal agreements with New Zealand or the United Kingdom. In certain cases of hardship, the pension or benefit may continue for people who left before 8 May 1973. The number of Australian pensions being paid overseas under the general portability provisions at 30 June 1987 was 25,816.

Other services of the Department of Social Security and the Department of Community Services and Health

The Department of Social Security provides a professional social work service and Ethnic and Aboriginal Liaison Office Schemes. The Department of Community Services and Health administers grants to major national welfare organisations such as: Australian Council of Social Service, Australian Council of the Ageing, Australian Council for Rehabilitation of Disabled, Australian Early Childhood Association and to non-government welfare agencies providing emergency relief or in financial difficulties.

To assist in its role of advising the government on income support policy and to administer its programs efficiently and fairly, the Department of Social Security initiates, develops and undertakes experimental projects and undertakes research studies. The Department also provides funding to the Social Welfare Research Centre at the University of New South Wales.

Commonwealth Government assistance through welfare organisations

Supported Accommodation Assistance

The *Supported Accommodation Assistance Program* (SAAP) was introduced in all States and Territories from 1 January 1985. It incorporated former programs such as the *Women's Emergency Services Program*, the *Youth Services Scheme* and the *Homeless Persons' Assistance Program*. SAAP consolidated and improved the co-ordination of former Commonwealth/State and Commonwealth programs and has been developed jointly with States and Territories in consultation with service providers and users.

SAAP aims to provide supported accommodation services and related support services to men, women, young people and their dependants, who are permanently or temporarily homeless as a result of crisis, and who need such assistance to move toward independent living where possible and appropriate.

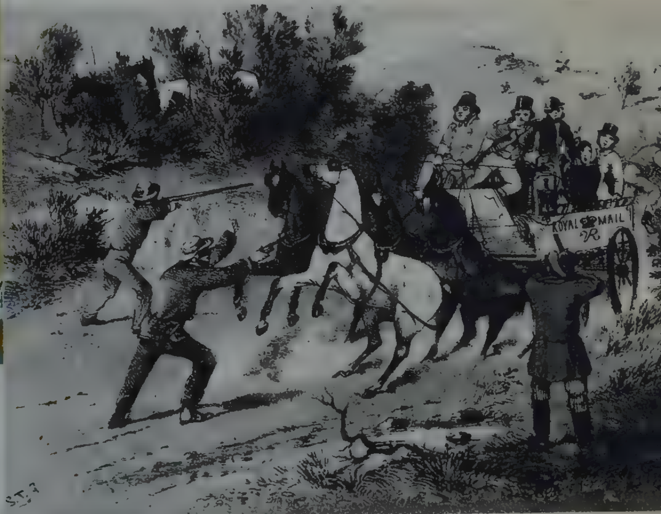
SAAP provides recurrent and capital non-housing funds to non-profit organisations and local government bodies for supported accommodation such as refuges, hostels and half-way houses and for related support services such as meals services, non-clinical community based rape crisis centres, day centres, detached workers and referral services. A complementary *Crisis Accommodation Program* (CAP) within the Commonwealth/State Housing Agreement provides capital housing funds for SAAP services. CAP also provides some capital funding for unsupported accommodation.

SAAP comprises the following three sub-programs:

- *Youth Supported Accommodation Program* (YSAP)—services for young people aged 12–25 years, and, if applicable, their dependants.
- *Women's Emergency Services Program* (WESP)—services for women, and women with dependent children, escaping from intolerable domestic circumstances or other crisis situations.
- *General Supported Accommodation Program* (GSAP)—services for homeless men, women, and any dependants, and for services which do not clearly come within YSAP or WESP.

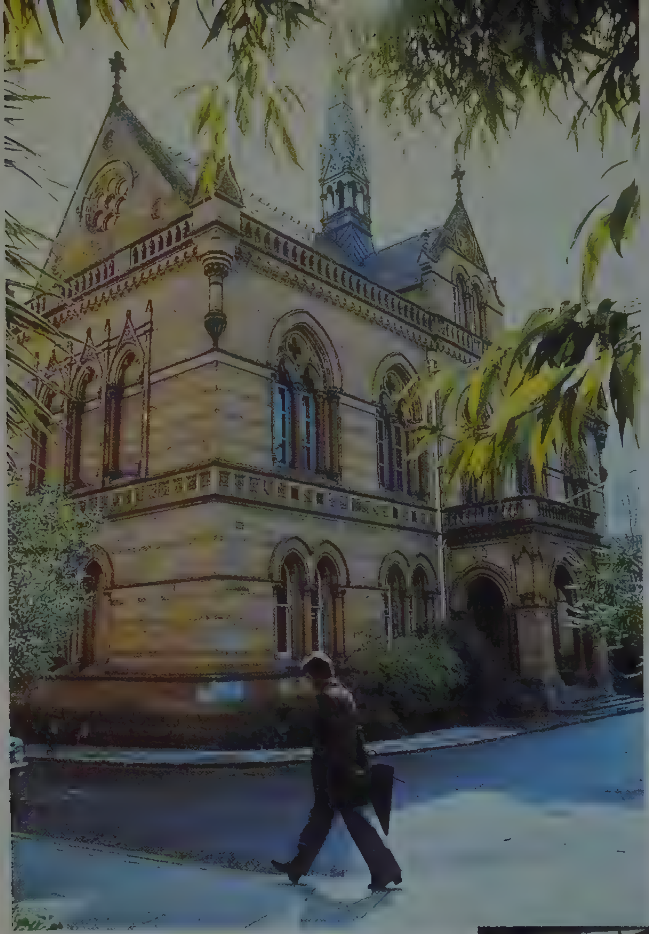
Police train drug-sniffer dogs at Sydney airport.

Mounted policeman in Sydney traffic.



Bushrangers attacking a mail coach in 1864. An artist's reconstruction by S. T. Gill which is in the Mitchell Library, Sydney.

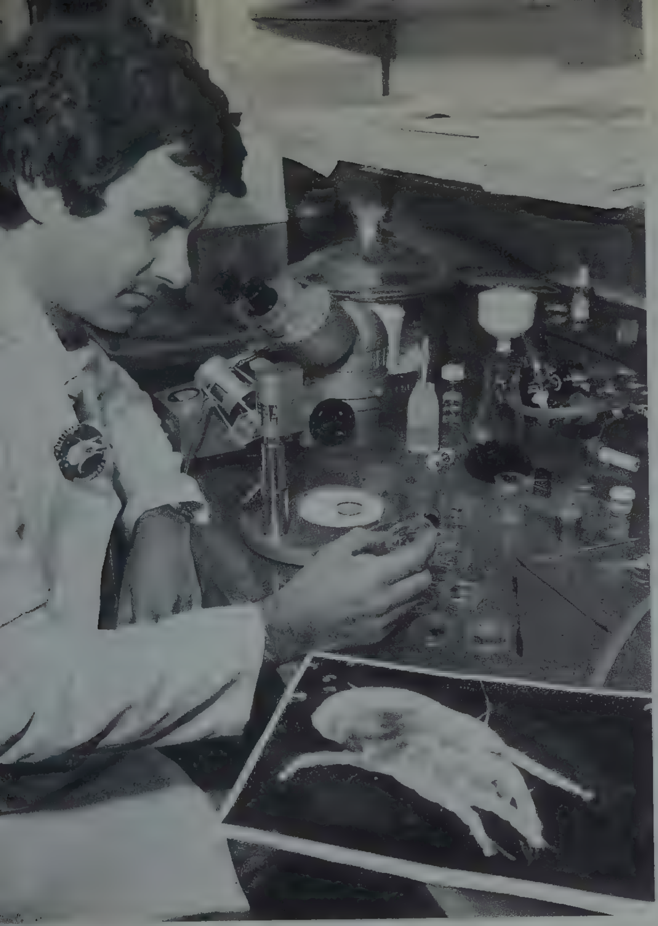
Photos—Promotion Australia



Mitchell Building, Adelaide University.

The Spastic Centre, Sydney.

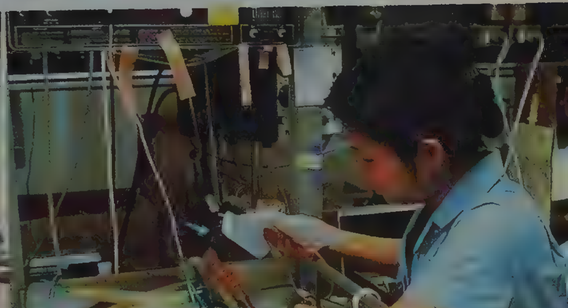
Sydney Dance Company performs *Viridan.*



Australian asthma study of Dust-Mite allergy.

A Canberra pre-school.

eacher from Western Australia mobile TAFE teaches welding.



Neonatal intensive care at Queen Victoria Medical Centre, Melbourne.

Photos—Promotion Australia

N.S.W. Water Police, circa 1920.

Lifeboat towing a raft during an exercise, Australian Maritime College.

Photos—Promotion Australia

The *Supported Accommodation Assistance Act 1985* provides the legislative base for the program, which is administered on a day to day basis by State and Territory governments in accordance with the SAAP Agreement and national guidelines. Commonwealth/State advisory structures involving both levels of government and service providers have been established in States and Territories to advise on program needs and priorities.

In 1983–84 the Commonwealth spent $14.9 million on programs later incorporated in SAAP, including the *Homeless Persons' Assistance Program*. Between 1984–85 and 1986–87, Commonwealth SAAP expenditure increased from $30.0 million to $49.1 million. States and Territories are required to match nominated Commonwealth expenditure on SAAP.

Home and Community Care Program

In the 1984–85 Budget, the Commonwealth Government announced its intention to restructure support through a proposed *Home and Community Care Program* for frail aged persons, non-aged persons with disabilities, and their carers who were in need of home care services.

The *Home and Community Care Program* (HACC) was established by the *Home and Community Care Act 1985* with a major objective of preventing the inappropriate or premature admission of people with functional disabilities to long-term residential care. The program is jointly funded by the Commonwealth and State Governments with the aim of providing a comprehensive range of home and community care services to the target population.

The basis of HACC comprised the services provided under four subsumed Acts:

- The *States Grants (Home Care) Act 1969*, under which the Commonwealth cost-shared with the States the provision of home care services and senior citizens' centres, and cost-shared with organisations the salaries of welfare officers of senior citizens' centres.
- The *States Grants (Paramedical Services) Act 1969* under which, in the three participating States, the Commonwealth cost-shared the provision of home based paramedical services such as physiotherapy and occupational therapy.
- The *Home Nursing Subsidy Act 1956* which provided for Commonwealth subsidy to home nursing organisations not exceeding the contribution of State or local governments to the home nursing service.
- The *Delivered Meals Subsidy Act 1970* under which the Commonwealth provided various levels of assistance to organisations delivering meals to the aged or invalid pensioners.

A number of new service types including transport, linen/laundry, respite care, day care, expanded food service and personal care, have been developed since HACC commenced. These, together with the basic services, are designed to meet a wide range of needs.

The importance of HACC within the government's overall plan to enhance the independence, security, and quality of life of individuals was further recognised by the announcement of additional funds in the 1986–87 Budget. These funds will be available over 4 years ($5.0 million in 1987–88, $8.0 million in 1988–89, $15.0 million in 1989–90 and $20.0 million in 1990–91). It is intended that the first projects to use these funds will be aimed at achieving the better integration and co-ordination of service delivery within the community.

The Commonwealth also produced a policy document in November 1986, *The HACC Program—Commonwealth Priorities for Service Development*, which identified Commonwealth views on the future direction of the program and major issues which needed to be addressed. In addition, under the terms of their Agreements, aspects of the program are to be reviewed by the Commonwealth and the States/Territories by the end of 1987–88.

COMMONWEALTH EXPENDITURE ON HOME AND COMMUNITY CARE PROGRAM
($'000)

	1985–86	*1986–87*
HACC payments to the States and the Northern Territory	100,501	134,343
HACC payments to the Australian Capital Territory	343	770
Planning and development	90	260
Total expenditure	**100,934**	**135,373**

Programs for families with children

The *Children's Services Program* provides grants to local government authorities and non-profit community organisations for a range of child care services. Children of working parents are catered for by centres or through other families and by out-of-school care services. Occasional care services are provided for the children of parents who are at home and who need a few hours a week without their children.

Other services funded under the program include special services for Aboriginal children and children with disabilities or of non-English speaking background, as well as resource and advisory services for child care service providers.

The *Family Support Services Scheme* was administered jointly with State and Northern Territory governments. It provided funds for a range of services offering coping and counselling skills to families in stress. The *Family Support Program*, which commenced on 1 January 1987, replaced this scheme. It is a joint Commonwealth/State funded venture. Services funded under the new program will help all kinds of families with young children by strengthening the helping resources already available in most communities.

EXPENDITURE ON CHILDREN'S SERVICES PROGRAM
($'000)

	1981–82	*1982–83*	*1983–84*	*1984–85*	*1985–86*	*1986–87*
Pre-school	33,005	33,090	33,090	33,090	16,545	—
Other children's services (*a*) . . .	47,355	64,954	80,125	122,726	150,072	181,245
Total expenditure .	**80,360**	**98,044**	**113,215**	**155,816**	**166,617**	**181,245**

(*a*) Including Family Support Services Scheme and Family Support Program.

Emergency relief grants

The *Emergency Relief Program* provides community welfare organisations with grants to help them make emergency relief payments to individuals and families experiencing temporary financial crisis, the solution to which is beyond their own resources.

To improve the effectiveness of the program, Commonwealth/State advisory committees in each State and Territory recommend which agencies should receive funds. The committees consist of representatives of the Commonwealth Departments of Community Services and Health, Social Security, Aboriginal Affairs, State/Territory welfare departments and the non-government sector, represented by the relevant State/Territory Council of Social Service.

COMMONWEALTH EMERGENCY RELIEF APPROPRIATIONS

Financial year	*Appropriation*
	$
1981–82	500,000
1982–83	2,500,000
1983–84	5,000,000
1984–85	5,950,000
1985–86	6,000,000
1986–87	6,320,000

People with disabilities

Under Part II of the *Disability Services Act 1986*, the Commonwealth provides grants to States and eligible organisations (non-profit and local government bodies and tertiary institutions) towards the recurrent and capital costs of a range of eligible services. These services include accommodation support, advocacy, competitive employment training and placement, independent living training, information, print disability services, recreation, respite care, and supported employment.

For services to be eligible for funding they must cater predominantly for persons with a disability, whose disability results in their having a substantially reduced capacity for communication, learning or mobility. The disability must be attributable to an intellectual, psychiatric, sensory or physical impairment or a combination of such impairments, and be permanent or likely to be permanent.

The Disability Services Act requires organisations to report regularly on the extent to which they have achieved positive consumer outcomes for their clients. In addition, formal reviews of their services are scheduled every five years.

The funding for eligible services in 1986–87 amounted to $126.6 million. An estimated 35,000 people with disabilities receive services from funded organisations.

The Department of Community Services and Health's Rehabilitation Services provide social and vocational rehabilitation services for working age people with disabilities. The major criterion for acceptance into a rehabilitation program is the expectation of significant gain towards independent living or vocational goals.

Services are provided from and arranged through a national network of some 80 regional rehabilitation units. Programs may include:

- employment, vocational, mobility and other independent living training and education courses;
- diagnostic and assessment services, occupational therapy, physiotherapy, speech therapy and counselling services;
- aids and appliances and home, vehicle and workplace modifications;
- associated accommodation and training allowances.

In 1986–87, about 5,000 people commenced rehabilitation. The 1986–87 expenditure for rehabilitation services was $8.3 million consisting of $4.7 million for client services and $3.6 million by way of Training Allowances and Living Away from Home Allowance payments. The number of clients commencing rehabilitation programs is expected to rise to about 7,000 in 1987–88 reflecting an anticipated increased demand for rehabilitation services as:

- access to services in client's local communities is increased through enlargement and consolidation of services offered through regional rehabilitation units;
- increases occur in numbers of compensable clients referred from accident insurance authorities.

In the 1986–87 Budget, the Commonwealth introduced a number of initiatives aimed at improving the accommodation options available to younger people with disabilities. It was found in the Handicapped Programs Review and the Review of Nursing Homes and Hostels that many younger people with disabilities were being housed in nursing homes which were quite inappropriate for their needs, minimising the opportunity for self-development afforded by less restrictive types of accommodation. These initiatives comprise:

- increasing the number of accommodation places available for disabled people over the next three years;
- providing attendant care services in the community for some of those severely physically disabled people who presently live in Commonwealth funded nursing homes and are capable of managing their own affairs;
- commencing a gradual down-scaling of some special purpose nursing homes by relocating residents in the community.

Residential care for aged people

The aim of the Commonwealth Government's residential care program is to ensure access by frail aged and disabled people to the combination of services which is most appropriate to their needs and which will promote their independence. Support is provided by the Commonwealth for two main types of residential care services—nursing homes and hostels. Nursing homes provide services for people who need continuous professional nursing and personal care, while hostels provide a wide range of accommodation and personal care services for less dependent aged and disabled people.

Two of the key objectives of the residential care program are to provide a range of accommodation and care services to meet the assessed needs of aged persons, and to promote the quality of life for residents receiving such care. There is concern that, to date, the public has perceived nursing homes as being the principal form of care for elderly people, and that there has been an over-emphasis in the level of resources supplied to this sector. The admission of people to nursing homes, where this level of care is not essential, disadvantages those people and results in fewer resources being available to support other types of care for other aged and disabled people. As a result, the Government is developing a range of policies to prevent inappropriate admissions to nursing homes, to ensure that the growth of nursing homes is curtailed, and to develop further alternative residential accommodation and care options, together with expanded community care options.

Commonwealth Government funding arrangements

Recurrent funding

The Commonwealth provides recurrent funding to nursing homes to provide accommodation and care services for approved residents. The amount of the Commonwealth funding varies between States and is dependent on the fee that is approved for individual homes having regard to a minimum resident contribution and a State maximum benefit level. Residents are required to pay a minimum contribution equal to 87.5 per cent of the single age pension, including rental assistance.

The Commonwealth also pays subsidies to approved residents in hostels. These subsidies are payable according to the degree of resident dependency. In addition, a respite care subsidy is paid to help hostels meet the cost of providing short term accommodation and care for people normally living in the community.

The Commonwealth is currently introducing major changes to the funding arrangements for nursing homes in order to introduce more equitable arrangements more appropriate to residents' needs. The new arrangements involve the phased introduction of standard resident fees and standard Commonwealth benefits. When the transition has been completed in 1991, residents will be required to only pay the equivalent of 87.5 per cent of the single age pension, including rental assistance.

In 1987–88, the Commonwealth, in consultation with the States, is developing national uniform nursing and personal care staffing standards for nursing homes. Uniform standards in this area will overcome the existing inequitable arrangements, whereby the levels of staffing hours vary markedly between nursing homes and between States, without regard to the level of dependency of the residents.

In addition to the general recurrent funds, financial assistance is available under the *Special Services Program* to prolong the relative independence of aged people in residential care, as well as to develop the provision of services appropriate to the needs of special groups. Services funded under this program include grants to hostels for services to dementia sufferers. The number of facilities receiving subsidies under the *Special Services Program*, together with the amounts received, are given in the following tables.

RESIDENTIAL CARE RECURRENT FUNDING

		1984–85	*1985–86*	*1986–87*
Hostels—				
Approved premises (*a*)	No.	920	884	946
Residents (*a*)	No.	35,605	38,227	39,568
Expenditure	$'000	55,520	58,960	67,027
Nursing Homes—				
Approved premises (*a*)				
Deficit financed (*b*)	No.	410	424	426
State government	No.	170	174	177
Private	No.	755	744	741
Charitable and religious	No.	136	139	142
Total	*No.*	*1,471*	*1,481*	*1,486*
Residents (*a*)				
Deficit financed (*b*)	No.	18,706	19,161	19,382
Government	No.	14,746	14,791	14,645
Private	No.	35,130	34,937	34,872
Charitable and religious	No.	6,620	6,817	7,033
Total	*No.*	*75,202*	*75,706*	*75,932*
Expenditure—				
Deficit financed (*b*)	$'000	283,300	306,646	354,015
Government	$'000	177,811	182,039	184,180
Private, charitable and religious	$'000	479,514	521,410	589,145
Total	*$'000*	*940,625*	*1,010,095*	*1,127,340*
Special services/dementia—				
Facilities	No.	14	25	166
Expenditure	$'000	400	550	4,594

(*a*) As at 30 June. (*b*) 'Deficit Financed' refers to nursing homes which were operated by Charitable and Religious bodies under deficit funding arrangements. As at 30 June 1987 all but a quarter of these homes have changed to a new funding arrangement common with both private sector, and other Charitable and Religious homes. Those homes which will remain under the deficit funding arrangements primarily provide services to the young disabled.

RESIDENTIAL CARE, RECURRENT FUNDING BY STATE, 1986–87

		N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Total*
Hostels—										
Approved premises (*a*)	No.	283	226	171	114	122	23	2	5	946
Residents (*a*)	No.	12,556	9,123	7,907	4,932	3,942	708	57	343	39,568
Expenditure	$'000	21,787	15,869	12,368	8,539	6,444	1,349	102	569	67,027
Nursing Homes—										
Approved premises (*a*)										
Deficit Financed (*b*)	No.	146	86	74	63	27	29	1	0	425
Government	No.	32	83	23	5	25	6	1	2	177
Private	No.	291	221	78	83	56	10	1	1	741
Charitable and Religious	No.	56	16	37	10	13	8	1	1	142
Total	*No.*	*525*	*406*	*212*	*161*	*121*	*53*	*4*	*4*	*1,486*
Residents (*a*)—										
Deficit Financed (*b*)	No.	7,278	3,142	3,743	2,995	1,204	965	55	0	19,382
Government	No.	3,128	4,947	2,481	1,141	1,808	862	24	254	14,645
Private	No.	16,512	7,359	4,471	3,206	2,938	286	40	60	34,872
Charitable and Religious	No.	3,218	618	1,744	322	669	343	12	107	7,033
Total	*No.*	*30,136*	*16,066*	*12,439*	*7,664*	*6,619*	*2,456*	*131*	*421*	*75,932*
Expenditure—										
Deficit Financed (*b*)	$'000	122,207	71,276,	56,420	63,735	23,413	15,735	1,229	0	354,015
Government	$'000	35,808	82,083	26,327	12,019	18,037	6,613	372	2,921	184,180
Private Charitable and Religious	$'000	261,383	144,935	72,433	54,947	45,519	7,096	868	1,964	589,145
Total	*$'000*	*419,398*	*298,294*	*155,180*	*130,701*	*86,969*	*29,444*	*2,469*	*4,885*	*1,127,340*
Special services/ dementia—										
Facilities	No.	46	60	36	16	5	2	0	1	166
Expenditure	$'000	1,489	1,321	978	455	256	59	0	36	4,594

(*a*) As at 30 June. (*b*) 'Deficit Financed' refers to nursing homes which were operated by Charitable and Religious bodies under deficit funding arrangements. As at 30 June 1987 all but a quarter of these homes have changed to a new funding arrangement common with both private sector, and other Charitable and Religious homes. Those homes which will remain under the deficit funding arrangements primarily provide services to the young disabled.

Capital funding

Under the *Aged or Disabled Persons Homes Act 1954* and the *Aged or Disabled Persons Hostels Act 1972*, the Commonwealth contributes towards the capital costs for either the purchase of land and construction, or the purchase of hostels and nursing homes, to be used to accommodate aged people. In some cases, funds are also available to upgrade existing accommodation. Up to 100 per cent of capital funding can be provided for financially disadvantaged groups, including Aboriginals and ethnic groups.

RESIDENTIAL CARE CAPITAL FUNDING

		1984–85	*1985–86*	*1986–87*
Grants approved	No.	125	120	227
Amounts approved	$'000	42,666	46,469	106,634
Beds included in approvals—				
Self-contained units	No.	289	178	0
Hostels	No.	1,452	834	3,567
Nursing homes	No.	656	535	1,304
Total	**No.**	**2,397**	**1,547**	**4,871**

RESIDENTIAL CARE CAPITAL FUNDING BY STATE, 1986–87

		N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Total*
Grants approved	No.	63	70	51	15	12	11	0	5	227
Amounts approved	$'000	35,888	25,419	24,527	6,982	5,547	4,019	0	4,252	106,634
Beds included in approvals—										
Hostels	No.	1,229	1,005	792	72	188	157	0	124	3,567
Nursing Homes	No.	414	191	265	265	60	49	0	60	1,304
Total	No.	**1,643**	**1,196**	**1,057**	**337**	**248**	**206**	**0**	**184**	**4,871**

Planning mechanisms

The focus of the long term strategy of the government is a commitment to provide in each State 100 residential care places per 1,000 persons aged over 70 years. This would comprise approximately 60 hostel and 40 nursing home beds, a target to be achieved over the next twenty years. As at June 1987, the national nursing home/hostel ratio was almost the reverse of this, with there being 64 nursing home beds and 37 hostel beds per 1,000 persons aged over 70 years. To correct existing imbalances, it is intended that only 10 per cent of any new beds approved will be for nursing homes, with the remainder being hostel places. From 1987 to 1990, it is expected that approximately 1,400 new nursing home beds and 12,000 new hostel beds will be approved. This planning mechanism provides the control of the rate of future growth of nursing homes and allows for the relocation of resources to other aspects of care for the aged and disabled. To complement the planning procedure, there are improved arrangements for admission control to nursing homes to ensure that only persons for whom nursing home care is the most appropriate option receive Commonwealth benefits.

Assessment services

The government recognises the need for a more complete and effective assessment of care needs of frail elderly people. Policies are being implemented to ensure that aged people should have appropriate advice to assist them to choose suitable services. In order to satisfy these requirements, funding has been provided for the development of assessment services which will assess the medical, psychological and social needs of aged persons. An Australia-wide network of assessment teams will be developed over the next five years in co-operation with State and Territory governments. These services will be able to assess people in their own homes, in hospitals or in extended care facilities. It is intended that in the next three to five years, the teams will take over the full responsibility for both assessing all people seeking nursing home admission and determining hostel subsidy eligibility.

Quality of care

The Commonwealth has had an on-going responsibility for the physical environment of nursing homes and hostels. This responsibility is backed up by regular inspection of facilities. However, as a reflection of the concern for the needs of the individuals within residential facilities, there has been a significant change in focus, towards the outcome of the service, that is, the quality of care and quality of life of residents.

In the past, regulations and legislation have primarily addressed the inputs to care and the physical environment of nursing homes, rather than the outcomes. The new outcome standards for nursing homes, developed over the past year by the Commonwealth, State and Territory Governments working in consultation with people and groups involved in the nursing home industry, describe the care and lifestyle objectives of nursing homes. The intent of the standards is to encourage and enable residents to perform activities, maintain responsibilities and receive support according to their individual needs and capacities. The Commonwealth/State Working Party on Nursing Home Standards has sought to ensure that the standards developed are achievable by service providers, relevant to actual wishes and needs of residents, and able to be monitored. Since 1 July 1987, ongoing funding of nursing homes has been conditional on compliance with standards.

Equity of access to residential care

A key element of the needs-based planning mechanism noted above is to ensure equity of access to residential care for special needs groups in all geographic areas. In particular, steps are being taken to improve access by the ethnic and Aboriginal communities. In addition, the Commonwealth uses approaches such as fees control in nursing homes and quotas in hostels to ensure that financial disadvantage does not restrict entry to supported accommodation.

Assistance for home-based nursing care

While the residential care program focuses mainly on long-stay residential care, there are provisions through the program for assistance to those aged and disabled persons who wish to stay in the community. Short-term or respite care is available for these persons who are living in the community. It allows carers of such persons a break from their care responsibilities and provides support for frail aged people caring for themselves.

In addition, the Domiciliary Nursing Care Benefit is available to assist people who choose to care, in their own homes, for chronically ill or infirm relatives. Typically, these people are incapable of caring for themselves or being left unsupervised for any significant period, and would require admission to a nursing home if the home-care were not available. The basic criteria for the payment of the benefit are that the person must be aged 16 or over and be in receipt of continuing nursing care under the supervision of a registered nurse. The benefit is payable at the rate of $42 a fortnight. The amounts of the subsidies paid for Domiciliary Nursing Care Benefits over the past three financial years are tabled below, together with details on the *Assessment Service Program*.

RECURRENT FUNDING OF DOMICILIARY NURSING CARE BENEFITS AND ASSESSMENT PROGRAM

		1984–85	*1985–86*	*1986–87*
Domiciliary nursing care benefit—				
Beneficiaries	No.	19,133	20,700	27,209
Expenditure	$'000	26,438	25,395	27,333
Assessment services—				
Projects	No.	31	35	65
Expenditure	$'000	3,000	3,987	6,249

RECURRENT FUNDING OF DOMICILIARY NURSING CARE BENEFITS AND ASSESSMENT PROGRAM, BY STATE, 1986–87

	N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Total*
Domiciliary nursing care benefit—									
Beneficiaries (No.)	10,490	6,221	4,663	1,608	2,938	974	45	270	27,209
Expenditure ($'000)	10,220	6,536	4,493	1,653	3,009	1,072	50	300	27,333
Assessment services—									
Projects (No.)	23	19	4	7	7	3	2	0	65
Expenditure ($'000)	2,065	2,458	207	746	362	273	139	0	6,249

Aboriginals

A referendum in May 1967 led to the repeal of section 127 of the Constitution which provided that, in reckoning the numbers for census purposes, Aboriginals should not be counted, and to the deletion of the words 'other than the Aboriginal race in any State' from section 51 (xxvi) which relates to the power of the Commonwealth Parliament to make laws with respect to people of any race. The Constitutional amendment, in effect, gave the Commonwealth Government shared power with the State governments in relation to Aboriginals. The Commonwealth Government's aim is to help Aboriginals become self-managing and self-sufficient while, at the same time, preserving and developing their own distinctive culture. The Commonwealth Department of Aboriginal Affairs, which is responsible for policy, planning and co-ordination in respect of Aboriginal affairs at the national level, has regional offices in all States and the Northern Territory.

Aboriginal views on the long term goals and objectives which the government should pursue, the programs it should adopt, and on the need for new programs in Aboriginal affairs have in recent years been sought through various Aboriginal advisory organisations such as the National Aboriginal Consultative Council (NACC), (1973–1977), and the National Aboriginal Conference (NAC), (1977–1985). Since membership of the NAC was terminated from 30 June 1985, consultations with Aboriginals have been continuing on the establishment of a new national Aboriginal consultative organisation to replace the NAC.

The Aboriginal Development Commission (ADC), an all-Aboriginal commission, was established in 1980 by the Commonwealth Government as an independent body. The ADC assists Aboriginal and Torres Strait Islander groups, communities and individuals to acquire land for a variety of purposes, engage in business enterprises, obtain finance for housing and other personal needs, and receive training where necessary.

Migrants

Intake

The number of migrants who have come to Australia since the end of World War II has passed the 4 million mark. These migrants have contributed significantly to Australia's population which has more than doubled, from 7.4 million at the end of 1945 to over 15.5 million at the end of 1985. At this time about 21 per cent of Australia's population was overseas born. Post-war immigration peaked in 1970 with 185,300 settler arrivals, declined thereafter to a low of 54,100 in 1975, increased again to 118,700 in 1981 and decreased to 73,100 in 1984. In 1986, settler arrivals increased again, to 103,300.

Accommodation of migrants

Migrant centres and flats provide a residential base for the provision of programs and services for newly arrived refugees and some other migrants.

There are currently five migrant centres, located in all mainland State capital cities with a capacity to accommodate up to 2,750 migrants and refugees. Additionally, 224 migrant transitory flats can accommodate up to 800 persons at any time.

Due to a downturn in demand for migrant centre accommodation and high operating costs of existing centres, the Department of Immigration, Local Government and Ethnic Affairs (DILGEA) is further reviewing the need for accommodation capacity. New self-contained, self-catering units were opened at Pennington in Adelaide in October 1986, and remaining stocks of flats are being modernised to provide decentralised on-arrival accommodation.

Ethnic affairs—services for migrants and refugees

The Department of Immigration, Local Government and Ethnic Affairs provides services to facilitate the successful settlement and welfare of migrants and refugees and their integration into Australian society. Its responsibilities therefore interface with the broader responsibilities of the Advisory Council on Multicultural Affairs and with the Office of Multicultural Affairs (OMA) located within the Department of Prime Minister and Cabinet.

Settlement Services Units operate in all States and Territories to provide support and counselling to individuals and groups of migrants as they settle into the community. These Units consist of a team of social workers supported by welfare officers, many of whom are bilingual, and they offer services from a range of locations such as migrant centres, DILGEA offices and in communities where recently-arrived migrants are settling. Where practicable, migrants are referred to the local community services most suitable to their needs. DILGEA staff are working to assist mainstream agencies in making their services more accessible to migrants.

Departmental activities are complemented by those of social workers and welfare officers employed by voluntary agencies funded by Commonwealth grants. In many respects these voluntary agencies are best placed to assist migrants. The number of Grants-in-Aid for the employment of welfare workers by voluntary agencies as at 30 June 1987 was 201. The Settlement Services Branch also administers the Migrant Project Subsidy Scheme (MPSS) which provides grants of up to $10,000 for a wide range of welfare related projects. In 1986–87, 48 grants worth a total of $200,000 were approved.

As part of its settlement services, DILGEA provides a free interpreting and translation service to non-English-speaking migrants and refugees, and to members of the host community having dealings with them. The Department also offers the translation service to Commonwealth departments and other bodies for a fee. At the present time, translation units are operating in Canberra, Melbourne and Sydney and a translation service is offered by Telephone Interpreter Service (TIS) centres in other capitals.

In 1973, TIS was established to help overcome language related communication problems by providing, via the telephone, a 24 hour interpreting, information and referral service. TIS interpreters, together with community contract interpreters, cover over 75 languages. Where necessary, and especially in emergency situations, arrangements may be made for the personal attendance of an interpreter. TIS currently operates in Canberra, all State capitals, Darwin and in a number of major provincial centres of migrant population. During the year ended 30 June 1986, a total of 357,178 calls was received by TIS.

Cost-sharing agreements to encourage the establishment or extension of State interpreting and translation services in areas of prime State responsibility have been concluded with New South Wales, Victoria, Queensland, South Australia and the Northern Territory. The Commonwealth had contributed $4.39 million under the cost-sharing program since its inception in 1979 to 30 June 1987. The program is currently being reviewed, in consultation with the States and the Northern Territory, with a view to its continuing expansion and development along the lines of the Commonwealth Government's access and equity program.

A National Accreditation Authority for Translators and Interpreters (NAATI) was established in 1977 to develop standards of competence for those professions in Australia and to test and accredit interpreting–translating practitioners and courses. In October 1984, NAATI became an independent incorporated body. Currently, NAATI is in the second year of a five year program of accelerated expansion and development. NAATI is strongly supported and funded jointly by the Commonwealth, State and Territory Governments.

Twenty-three migrant resource centres and seven sub-centres and one pilot project have been established in areas of high migrant density. These resource centres provide support for all agencies (both government and voluntary) which assist migrants, and also provide a focus for community participation and development of local resources to meet migrant needs.

The settlement of refugees is an important element in the Commonwealth Government's overall migrant settlement program. In addition to offering refugees accommodation and settlement services at migrant centres, the Commonwealth Government also moves numbers of refugees directly from refugee camps overseas into the Australian community where they are in the care of families, groups and organisations which have undertaken to provide a range of support and assistance.

The *Adult Migrant Education Program* (AMEP) provides a wide range of language learning opportunities, and offers information about Australia. DILGEA is responsible for the funding and co-ordination of the program at the national level, while service delivery is provided in the main by Adult Migrant Education Services in each State and Territory. In 1986–87, expenditure on the *Adult Migrant Education Program* was $50 million. Provisional data show that new enrolments in the program nationally totalled about 126,000 persons, including 12,000 in courses for new arrivals.

The status of 'Australian citizen' was created under the *Nationality and Citizenship Act 1948* which came into force on 26 January 1949. The relevant Act is now the *Australian Citizenship Act 1948* and under its provisions all new settlers, regardless of origin, are required to satisfy uniform requirements for the grant of citizenship. In the financial year 1986–87, 69,624 applications for Australian citizenship were received compared with 107,744 in 1984–85 and 99,153 in the 1985–86 financial year. Over 1.7 million new settlers have been granted Australian citizenship since 1949.

Veterans' Affairs

The Repatriation Commission was established under the *Repatriation Act 1920*. With the repeal of that Act on 22 May 1986, the Commission has continued in existence under the *Veterans' Entitlements Act 1986*. At present, the Commission consists of three full-time members. The functions of the Commission are set out in section 180 of the Veterans' Entitlements Act and include:

- granting pensions, allowances and other benefits in accordance with the provisions of the Act;
- establishing, operating and maintaining hospitals and other institutions for the treatment of eligible persons;

- arranging the provision of treatment and other services for eligible persons;
- advising the Minister and providing him with information on matters relating to the Act;
- performing other functions conferred on the Commission by the Act or other Acts;
- administering the Act subject to the control of the Minister.

The Department of Veterans' Affairs provides the administrative machinery through which the Commission operates. The central office of the Department is in Canberra. There is a branch office in the capital city of each State which is under the control of the Deputy Commissioner. Regional offices are located in Newcastle, Wollongong, Canberra, Ballarat, Townsville and Darwin.

The principal functions of the Department cover:

- payment of disability and dependants' pensions, service pensions and allowances to eligible veterans and their dependants;
- provision of medical treatment for veterans for injuries and illnesses accepted as service-related;
- provision of medical treatment in certain circumstances for veterans who are suffering from injuries and illnesses whether service-related or not;
- provision of medical treatment for war/defence widows and certain dependants of deceased veterans;
- provision of a wide range of other benefits for eligible persons.

Since 5 October 1976, the *Defence Service Homes Act 1918* has been administered by the Defence Service Homes Corporation (DSHC) within the Departmental framework. The Department also has responsibility for the Office of Australian War Graves and the Australian War Memorial.

Repatriation benefits are provided under the Veterans' Entitlements Act in respect of service with the Australian Defence Forces in World War I, World War II, Korea and Malayan operations, Australian contingent of the British Commonwealth Far East Strategic Reserve, Vietnam and South East Asia conflict and for service in the Regular Defence Forces on or after 7 December 1972. Certain civilians may also be eligible for benefits, as are Australian members of certain designated peacekeeping, observing and monitoring forces who had peacekeeping service overseas. Under the *Papua New Guinea (Members of the Forces Benefits) Act 1957*, indigenous inhabitants of Papua New Guinea who served in the Australian Forces in World War II and members of the Royal Papuan Constabulary and New Guinea Police Force who served in that conflict are eligible for compensatory type benefits. Australian mariners of World War II are eligible for compensation benefits under the *Seamen's War Pensions and Allowances Act 1940* and for income support benefits (service pension) subject to the conditions laid down in the Veterans' Entitlements Act. Members of other Commonwealth countries' forces and other allied veterans are not eligible for compensatory-type benefits in respect of their service, unless they were domiciled in Australia immediately before their enlistment. They may, however, qualify for income support payments such as the service pension.

The Annual Report of the Repatriation Commission provides more detailed information on Repatriation allowances, benefits and services.

VETERANS' AFFAIRS (excl. DSHC): TOTAL EXPENDITURE(*a*)

($'000)

Class	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*	*1986–87*
Pensions, allowances and other benefits	1,329,871	1,719,058	2,035,026	2,334,799	2,587,404	2,766,858
Medical treatment	426,360	499,005	561,035	612,238	681,172	778,111
Administration	63,996	69,556	84,848	116,934	111,805	107,330
Works, rent and maintenance	22,136	26,968	43,021	46,687	(*b*)49,728	(*b*)66,425
Total expenditure	**1,842,363**	**2,314,587**	**2,723,930**	**3,110,658**	**3,430,109**	**3,718,724**

(*a*) Includes expenditure by Departments other than Veterans' Affairs as follows: 1981–82, $18,260,360; 1982–83, $22,738,924; 1983–84, $27,541,925; 1984–85, $38,329,971. 1985–86 $38,545,000; 1986–87 $49,749,000. (*b*) Excludes rent paid on the Department's behalf by DOLGAS.

Benefits Program

The objective of the Benefits Program is to compensate veterans and dependants for the effects of war or defence service. Benefits such as pensions and allowances are administered under two sub-programs, the Compensation Sub-program and the Income Support Sub-program.

Compensation Sub-program

The main benefits provided under this sub-program are the disability pension and the war/defence widow's pension.

The disability pension is a compensatory payment for incapacity due to eligible war, defence or peacekeeping service. It is paid at a general rate between 10 per cent and 100 per cent, depending on the degree of war- or defence-caused incapacity. Higher rates are payable for those incapacitated to the 100 per cent general rate level where the war- or defence-caused incapacity alone affects their capacity for work. The intermediate rate is payable where the person is unable to work more than 20 hours a week and the special rate is payable where the person is unable to work more than eight hours a week.

The war/defence widow's pension is payable to the widow of a veteran:

- whose death has been accepted as war- or defence-caused;
- who was receiving or entitled to receive a special rate disability pension at the time of his death.

Orphan's pension is payable to the children of these veterans.

The following tables provide an analysis of the number of pensions in force, veteran's class of pension, new claims and deaths in 1986–87.

DISABILITY PENSIONS FOR INCAPACITATED VETERANS: NUMBER IN FORCE, BY CLASS OF PENSION: 30 JUNE 1987

Class	*1914–18 War*	*1939–45 War(a)*	*Korea, Malaya and F.E.S.R.*	*Special Overseas Service*	*Peace time forces*	*Miscel-laneous*	*Total*
Special Rate (T & PI or equivalent)	388	21,380	523	516	199	4	23,010
Intermediate Rate	6	840	21	29	20	—	916
General Rate—from 10 per cent to 100 per cent assessed disability—	1,316	123,211	3,775	8,433	8,567	29	145,331
Total	**1,710**	**145,431**	**4,319**	**8,978**	**8,786**	**33**	**169,257**

(*a*) Includes Interim Forces.

DISABILITY PENSIONS: NUMBER IN FORCE: 30 JUNE 1987

Class	*1914–18 War*	*1939–45 War*	*Korea, Malaya and F.E.S.R.*	*Special Overseas Service*	*Peace time forces*	*Miscel-laneous*	*Total*
Veterans	1,710	145,431	4,319	8,978	8,786	33	169,257
Wives and wife widows	4,547	102,228	2,543	5,019	3,609	34	117,980
Children	1	2,445	597	7,416	4,139	—	14,598
War widows	9,517	60,024	674	331	273	51	70,870
Children of deceased veterans	1	419	77	207	150	—	854
Orphans	—	29	3	2	2	—	36
Other dependants	180	1,228	44	45	18	2	1,517
Total	**15,956**	**311,804**	**8,257**	**21,998**	**16,977**	**120**	**375,112**

DISABILITY AND DEPENDANTS PENSIONS: 1986–87

	1914–18 War	*1939–45 War(a)*	*Korea, Malaya and F.E.S.R.*	*Special Overseas Service*	*Peace time forces*	*Miscel-laneous*	*Total*
New claims granted	175	9,531	311	610	1,585	6	12,218
Restorations	9	320	17	158	109	—	612
Pensions cancelled (gross)	218	4,410	328	1,155	751	8	6,870
Deaths of pensioners	2,204	9,934	180	66	53	5	12,442
Pensions in force at 30 June 1987	15,956	311,804	8,257	21,998	16,977	120	375,112
Amount paid in pensions in 1986–87 ($)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	991,744

(*a*) Includes Interim Forces. (*b*) Includes associated allowances.

The following table shows the number of pensions granted, pensions in force and the expenditure for disability pensions in each of the years ended 30 June 1982 to 1987.

DISABILITY PENSIONS

			Number of disability pensions in force at 30 June				
Year	*Pensions granted*	*Deaths*	*Incapacitated veterans*	*Dependants of incapacitated veterans*	*Dependants of deceased veterans*	*Total*	*Annual expenditure(a) ($'000)*
1981–82	7,325	11,648	170,546	190,970	51,614	413,130	510,675
1982–83	13,420	11,815	168,355	186,859	55,259	410,473	646,470
1983–84	13,119	11,842	166,062	183,105	58,110	407,277	722,660
1984–85	17,038	11,602	165,377	179,420	63,524	408,321	837,230
1985–86	19,256	12,666	169,109	170,589	70,044	409,742	549,125
1986–87	12,218	12,442	169,257	132,971	72,884	375,112	548,901

(*a*) Includes associated allowances.

A number of specific need allowances are available to veterans for their war or defence-caused incapacity. They include attendant allowance, specific disability (section 27) allowance, clothing allowance, recreation transport allowance, vehicle assistance scheme benefits, temporary incapacity allowance and loss of earnings allowance. Decoration allowance is also available.

SPECIFIC NEED ALLOWANCES

	No. of recipients	
Benefit	*at 30 June 1986*	*at 30 June 1987*
Attendant allowance	972	1,014
Section 27 (Items 1–6)	61	62
Section 27 (Items 7–15)	1,221	1,239
Clothing allowance	2,609	2,365
Recreation transport allowance	3,213	3,332
Recreation allowance	1,297	1,311
Vehicle assistance scheme	91	82

The *Veterans' Children Education Scheme* provides assistance with education and training for the children of special rate disability pensioners and certain other incapacitated veterans and deceased veterans whose death has been accepted as war- or defence-caused or who were receiving special rate disability pension or a section 27 allowance (items 1–6) at the time of death.

VETERANS' CHILDREN EDUCATION SCHEME, EXPENDITURE
($'000)

Cost of education of beneficiaries	*N.S.W.(a)*	*Vic.*	*Qld*	*S.A.(b)*	*W.A.*	*Tas.*	*Aust.*
1985–86	1,344.8	929.5	731.1	303.1	270.4	162.7	3,741.6
1986–87	1,674.0	1,093.0	951.4	324.1	367.0	221.3	4,630.8

(*a*) Includes A.C.T. (*b*) Includes N.T.

VETERANS' CHILDREN EDUCATION SCHEME: NUMBER RECEIVING BENEFITS AT 30 JUNE 1987

Type of training	*N.S.W.(a)*	*Vic.*	*Qld*	*S.A.(b)*	*W.A.*	*Tas.*	*Overseas*	*Total*
At school								
Primary(*c*). . . .	137	95	114	49	58	32	—	485
Secondary	434	202	385	111	110	96	2	1,340
Total at school . . .	*571*	*297*	*499*	*160*	*168*	*128*	*2*	*1,825*
Tertiary professional .	200	154	99	54	54	21	—	582
Technical.	23	65	20	—	—	4	—	112
Industrial.	—	—	11	—	—	6	—	17
Total	**794**	**516**	**629**	**214**	**222**	**159**	**2**	**2,536**

(*a*) Includes A.C.T. (*b*) Includes N.T. (*c*) Not in receipt of an education allowance.

Income-Support Sub-program

The main benefit paid under this sub-program is the service pension. This is an income and asset tested pension similar to the age and invalid pensions payable by the Department of Social Security. The pension is payable on the ground of age to veterans with qualifying service at age 60 (males) or 55 (females). Veterans with qualifying service may be paid the pension at any age if they are permanently incapacitated for work. Qualifying service generally means service in an area and at a time when danger from hostile enemy forces was incurred by the veteran.

Veterans of other Commonwealth and allied countries may also qualify for the Service Pension for service in wars or war-like conflicts in which Australia has engaged. Veterans of Commonwealth forces must have served outside the country of enlistment or be entitled to the award of a campaign medal for service within that country. Allied veterans must have served in formally raised forces. The veteran must be an Australian resident with at least ten years residency. Service pension is also available to Australians, other Commonwealth and Allied Mariners of World War II.

Service pensioners who satisfy a separate income/asset test may be eligible for 'fringe benefits', provided by the Commonwealth Government which include medical and hospital treatment, pharmaceutical benefits and telephone rental concessions.

A funeral benefit is available to assist in defraying the cost of the funeral of a service pensioner eligible for fringe benefits. The benefit is also available in respect of the funeral for a veteran who died in needy circumstances or who was receiving a special rate disability pension at the time of his death. It is also payable in respect of the funeral of a veteran whose death has been accepted as war- or defence-caused and, finally, for certain dependants of veterans.

The following tables give an analysis of the total number of pensions in force, new claims granted and deaths in 1985–86 and 1986–87.

SERVICE PENSIONS(*a*), 1986–87

		1914–18 War	*1939–45 War*	*Korea, Malaya and FESR(b)*	*Special Overseas Service*	*British Commonwealth*	*Allied Forces*	*Miscellaneous*	*Total*
New claims granted	No.	68	15,925	916	579	4,155	753	322	22,718
Restorations	,,	4	259	7	10	56	69	1	406
Cancellations (gross)	,,	183	7,936	140	88	1,131	137	52	9,667
Deaths	,,	747	9,782	121	32	839	78	64	11,663
Pensions in force at 30 June 1987	,,	3,601	336,952	4,399	2,065	48,294	7,061	2,422	404,794
					—$'000—				
Amount paid in pensions in 1986–87(*c*)	,,	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1,745,888

(*a*) Includes wives and widows. (*b*) Far East Strategic Reserve. (*c*) Includes associated allowances.

SERVICE PENSIONS: NUMBER IN FORCE, 30 JUNE 1987

Class	*1914–18 War*	*1939–45 War*	*Korea, Malaya and FESR*	*Special Overseas Service*	*British Commonwealth*	*Allied Forces*	*Miscellaneous*	*Total*
Veterans—								
Old age	2,395	179,688	1,154	192	25,347	3,702	1,209	213,687
Permanently incapacitated	2	14,942	1,500	1,022	1,927	255	190	19,838
Tuberculosis(*a*)	5	659	12	1	7	—	—	684
Total	*2,402*	*195,289*	*2,666*	*1,215*	*27,281*	*3,957*	*1,399*	*234,209*
Wives and widows	1,199	141,663	1,733	850	21,013	3,104	1,023	170,585
Total	**3,601**	**336,952**	**4,399**	**2,065**	**48,294**	**7,061**	**2,422**	**404,794**

(*a*) Eligibility on these grounds ceased on 2 November 1978.

The following table provides a summary of Service Pensions.

SERVICE PENSIONS

			Pensions in force			
	Pensions granted	*Deaths*	*Veterans*	*Wives and widows*	*Total*	*Annual expenditure(a) ($'000)*
1981–82	42,766	8,894	178,064	121,838	299,902	807,537
1982–83	57,012	9,604	200,492	140,656	341,148	1,057,950
1983–84	51,830	9,866	218,660	156,845	375,505	1,294,279
1984–85	40,885	10,258	227,705	164,794	392,499	1,477,874
1985–86	30,330	10,977	233,751	169,801	403,552	1,616,987
1986–87	22,718	11,663	234,209	170,585	404,794	1,745,888

(*a*) Includes associated allowances.

Treatment for veterans and dependants of veterans

Treatment is provided for all disabilities which have been accepted as service-related, and for pulmonary tuberculosis and cancer not related to service. In addition, and subject to certain conditions, treatment in Australia is provided for most non-service-related disabilities for: incapacitated veterans receiving disability pensions at or above the maximum (100 per cent) general rate; World War II veterans receiving both service pension at any rate and disability pension at the 50 per cent rate or higher; veterans or nurses who served in World War I; veterans of the Boer War; veterans who were detained by the enemy; war widows and certain other dependants of deceased male veterans whose deaths have been accepted as service-related, and of deceased Special Rate pensioners; and certain service pensioners.

Special emphasis is given to caring for the aged, aimed at limiting the dependence of veterans and war widows on nursing home care and encouraging the alternative of home care.

Treatment is provided at six repatriation general hospitals (one in each State), three auxiliary hospitals and Anzac Hostel in Victoria. The total number of available beds for patients in wards or parts of wards open for use in all these institutions at 30 June 1987 was 2,301.

Expenditure totalled $253.0 million in 1985–86 and $288.4 million in 1986–87. In addition, expenditure of $428.1 million in 1985–86 and $489.7 million in 1986–87 was incurred on medical services outside these institutions.

Repatriation hospitals and institutions

The figures below represent an Average Staffing Level for the year ending 30 June 1987.

FULL-TIME EQUIVALENT OPERATIVE STAFF EMPLOYED UNDER THE PUBLIC SERVICE ACT AT 30 JUNE 1987

1986–87 Average Staffing Level	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*A.C.T.*	*Aust.*
Direct non-institutional care (*a*)	88.02	75.82	29.49	22.83	16.07	17.59	39.12	288.94
Short-term institutional care (*b*)	2,634.03	1,763.46	1,267.13	885.42	995.23	267.63	—	7,812.90
Long-term institutional care (*c*)	301.57	183.62	93.35	—	—	—	—	578.54
Total	**3,023.62**	**2,022.90**	**1,389.97**	**908.25**	**1,011.30**	**285.22**	**39.12**	**8,680.38**

(*a*) Includes VVCS limb and applicance centres and the Hobart Pathology Laboratory. (*b*) Includes Repatriation General Hospitals. (*c*) Includes Auxiliary Hospitals and Anzac Hostel.

The following table gives details of in-patients treated at repatriation general hospitals and other repatriation institutions in each State (including community patients). The figures shown refer to treatment episodes, e.g. a person who is admitted to hospital twice during a year is counted twice.

In addition to the repatriation institutions, entitled persons are treated in other country and metropolitan hospitals and nursing homes at departmental expense. During 1985–86 and 1986–87, 54,868 and 64,810 entitled persons were accommodated and treated in non-departmental hospitals and 2,473 and 5,568 respectively in nursing homes.

Repatriation psychiatric patients requiring custodial care for a service-related disability are, by agreement with the State governments, accommodated at the expense of the Department of Veterans' Affairs in separate wings of psychiatric hospitals administered by the State authorities. Excluding 11 on trial leave, there were 341 repatriation patients in these hospitals at 30 June 1987.

Out-patient treatment is provided throughout Australia at repatriation hospitals and clinics and through the Repatriation Local Medical Officer Scheme. During 1986–87, 893,384 out-patients were treated at repatriation institutions, and local medical officers consultations totalled 3,109,704. The number of repatriation local medical officers in Australia at 30 June 1987 was 12,900.

REPATRIATION GENERAL HOSPITALS AND INSTITUTIONS: IN-PATIENTS TREATED 1986–87

	N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*Aust.*
REPATRIATION GENERAL HOSPITALS							
In-patients at beginning of year	559	294	374	232	263	73	1,795
Admissions and re-admissions during year	15,177	14,819	10,487	7,383	8,987	2,486	59,339
Total in-patients treated	*15,736*	*15,113*	*10,861*	*7,615*	*9,250*	*2,559*	*61,134*
Discharges (including deaths)	15,303	14,792	10,578	7,453	8,957	2,495	59,578
In-patients at end of year	433	321	283	162	293	64	1,556
REPATRIATION AUXILIARY HOSPITALS							
In-patients at beginning of year	145	72	55	—	—	—	272
Admissions and re-admissions during year	1,617	500	369	—	—	—	2,486
Total in-patients treated	*1,762*	*572*	*424*	—	—	—	*2,758*
Discharges (including deaths)	1,605	494	366	—	—	—	2,465
In-patients at end of year	157	78	58	—	—	—	293

Other medical services

Entitled persons may also be provided with: medicines, drugs and dressings through the Repatriation Pharmaceutical Benefits Scheme; services of allied health professionals including physiotherapy and podiatry; optometrical services including spectacles; dental treatment through the Local Dental Officer Scheme; rehabilitation and social work services; counselling through the Vietnam Veterans Counselling Service; and surgical aids and aids-to-daily living.

Artificial limb and appliance services

The following table gives details of production by all centres and commerical firms as a result of orders placed by the Department.

REPATRIATION ARTIFICIAL LIMB AND APPLIANCE CENTRES AND COMMERCIAL FIRMS: PRODUCTION 1986–87

(number)

CENTRES	
Legs	2,410
Arms	161
Surgical and adapted footwear	6,478
Other surgical appliances	1,506
Repairs	21,171
COMMERCIAL FIRMS	
Legs	2,480
Arms	162
Limb repairs	6,741

A wide range of artificial limbs and other surgical aids is supplied by the Repatriation Artificial Limb and Appliance Centre in each State capital and by sub-centres in Darwin, Townsville, Canberra, Newcastle and Albury. A mobile workshop operates in Victoria to provide services to remote locations. In addition, the Central Development Unit is located in provide services to remote locations. In addition, the Central Development Unit is located in Melbourne, and engages in research and development in the prosthetic and orthotic field.

Since 1973, artificial limbs have been provided free of charge to all members of the community who need them (except where patients are eligible for compensation), either through the Department's Repatriation Artificial Limb and Appliance Centres or on order through commercial limb-makers. The number of limbs supplied through the Department has increased significantly as the community has taken advantage of the Free-Limbs Scheme.

The cost of the Free Limb Scheme for 1986–87 was $7.1 million.

Household expenditure

Official Australian involvement in Household Expenditure Surveys can be traced back to the beginning of this century. In 1910–11, a survey, entitled *Inquiry into the Cost of Living in Australia,* was undertaken by the then Commonwealth Bureau of Census and Statistics (now the Australian Bureau of Statistics). During this survey, diaries were distributed to some 1,500 volunteers who were asked to keep records of all expenditures over the twelve months period from July 1910 to June 1911. Only 222 diaries were returned, which severely impaired the reliability of the results.

Because of the poor response to the 1910–11 inquiry, the Bureau conducted a further expenditure inquiry in 1913 which was intended to achieve a higher response rate by reducing the diary-keeping period to four weeks. However, the response was again small, with only six per cent of the 7,000 diaries returned.

The next major Household Expenditure Survey was not conducted until 1974. This Survey ran from July 1974 till June 1975. It was based on a sample of approximately 13,550 private dwellings selected from the six State capital cities and Canberra, from which about 9,100 fully responding households were obtained.

A second Expenditure Survey with respect to the year 1975–76 was commenced on 1 July 1975. The sample size was approximately 5,900 responding households. Geographical coverage was, however, extended beyond the six State capital cities and Canberra to include Darwin, other urban areas and the rural community.

The 1984 Household Expenditure Survey was the third major survey of its kind undertaken by the Australian Bureau of Statistics. It was conducted continuously over the twelve months January to December 1984. The Survey was designed to find out how the expenditure pattern of private households varies according to income level and other characteristics such as household size, composition, location and principal source of income. The 1984 Survey covered both rural and urban areas (except remote and sparsely settled areas) in all States and Territories, and was based on a sample of 9,571 responding households.

Summary of findings from the 1984 Survey

In 1984, average weekly household expenditure on commodities and services in Australia was $361.84. Household expenditure varied considerably across the States and Territories with the highest weekly expenditure being recorded in the two Territories at $472.38 for households in the Australian Capital Territory and $463.46 in the Northern Territory. Households in Tasmania had the lowest average weekly expenditure at $311.90. These differences in household expenditure reflect to some extent the differences in average weekly household income across the States and Territories. Households in the Australian Capital Territory and the Northern Territory had the highest average weekly incomes at $627.97 and $583.96 respectively. Households in Tasmania had the lowest average weekly household income at $392.47. These differences in household income are in turn related to such characteristics as the proportion of household income derived from earnings or government cash benefits, the average number of employed persons per household and the average age of the household head.

At the Australia level, average weekly household expenditure (*see* figure below) on *food and non-alcoholic beverages* ($71.22 or 19.7% of total expenditure on commodities and services), on *transport* ($59.00 or 16.3%) and on *current housing costs (for selected dwellings)* ($46.46 or 12.8%) accounts for 48.8 per cent of total expenditure. Much less significant is the expenditure on *personal care* ($6.60 or 1.8%) and on *tobacco* ($5.73 or 1.6%).

1984 HOUSEHOLD EXPENDITURE SURVEY: HOUSEHOLD EXPENDITURE BY HOUSEHOLD INCOME QUINTILE GROUP, AUSTRALIA (*a*)

	Average Weekly Household Gross Income Distribution ($)					
	0–171	*172–314*	*315–472*	*473–675*	*676 or more*	
	Lowest 20%	*Second quintile group*	*Third quintile group*	*Fourth quintile group*	*Highest 20%*	*All households*
AVERAGE WEEKLY HOUSEHOLD EXPENDITURE ($) (*b*)						
Broad Expenditure Group						
Commodity or service						
Current housing costs (selected dwelling)	25.92	35.20	50.27	55.13	65.85	46.46
Fuel and power (*c*)	7.25	9.28	10.68	11.53	14.06	10.56
Food and non-alcoholic beverages	38.53	57.70	69.23	81.73	108.97	71.22
Alcoholic beverages	3.88	8.12	11.53	15.48	22.52	12.30
Tobacco	3.13	5.50	6.21	6.54	7.25	5.73
Clothing and footwear	8.82	15.43	19.90	25.64	47.56	23.46
Household furnishings and equipment	11.49	19.38	26.12	34.12	47.38	27.69
Household services and operation	9.55	13.10	14.85	17.15	23.85	15.70
Medical care and health expenses	6.14	10.42	14.42	16.58	22.82	14.07
Transport (*d*)	19.98	41.67	56.02	72.18	105.25	59.00
Recreation	16.75	27.24	39.80	51.56	80.38	43.13
Personal care	3.18	4.77	5.98	7.76	11.33	6.60
Miscellaneous commodities and services	9.73	14.42	22.88	32.86	49.81	25.93
Total commodity or service expenditure	**164.35**	**262.23**	**347.88**	**428.26**	**607.04**	**361.84**
Selected other payments						
Income tax	6.28	25.90	66.28	105.15	197.07	80.07
Mortgage payments—principal (selected dwelling)	1.76	3.32	6.73	8.80	11.83	6.49
Other capital housing costs (*e*)	7.25	7.64	16.66	21.39	37.16	18.01
Superannuation and life insurance	0.93	3.46	10.37	16.40	26.43	11.51
HOUSEHOLD CHARACTERISTICS						
Average weekly household income ($) (*f*)	116.23	238.47	389.13	568.57	956.97	453.60
Average number of persons per household (number)	1.67	2.68	3.06	3.20	3.57	2.84
Average age of household head (years)	59.72	49.55	42.04	40.93	42.99	47.05
Number of households in sample	1,772	1,811	1,933	2,017	2,038	9,571
Estimated total number in population:						
Households ('000)	*1,005.5*	*1,013.1*	*1,007.2*	*1,007.7*	*1,005.7*	*5,039.2*
Persons ('000)	*1,683.3*	*2,710.4*	*3,081.3*	*3,222.7*	*3,593.2*	*14,290.9*

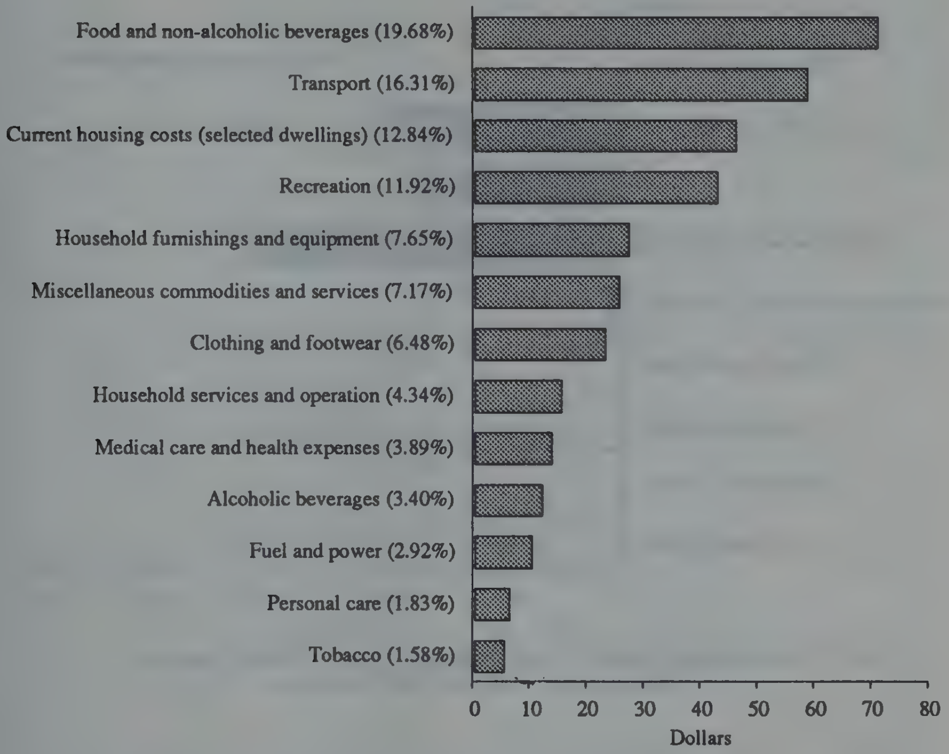
(*a*) The quintile groups in this table are 20% groupings of the estimated population when households are ranked in ascending order according to each household's total gross weekly income. (*b*) The average obtained when the total estimated expenditure for a particular broad expenditure group is divided by the estimated number of households within the scope of the survey in the relevant quintile group. (*c*) Excluded from this item are fuel and power for motor vehicles, which are included in *Transport*. (*d*) Includes fuel and power for motor vehicles. (*e*) Includes purchases of dwellings and other property; additions/extensions and renovations to dwellings; outside building and swimming pools; and payments to landscape contractors. (*f*) Household income is the sum of the gross weekly income of all household members.

1984 HOUSEHOLD EXPENDITURE SURVEY: HOUSEHOLD EXPENDITURE BY STATES AND TERRITORIES

	N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Australia*
AVERAGE WEEKLY HOUSEHOLD EXPENDITURE ($) (*a*)									
Broad Expenditure Group									
Commodity or service									
Current housing costs (selected dwelling)	52.05	45.70	43.17	36.63	41.50	39.04	67.42	60.78	46.46
Fuel and power (*b*)	9.76	12.19	9.27	10.72	10.37	10.91	10.71	13.57	10.56
Food and non-alcoholic beverages	73.14	73.18	69.32	62.79	69.18	62.80	88.24	86.06	71.22
Alcoholic beverages	13.13	11.11	12.21	11.49	13.24	9.45	25.04	15.05	12.30
Tobacco	5.65	6.41	4.63	5.50	6.27	5.56	9.60	4.42	5.73
Clothing and footwear	26.26	24.21	18.80	20.66	20.72	23.18	17.85	29.54	23.46
Household furnishings and equipment	28.85	27.67	23.04	29.84	28.54	23.93	37.26	35.62	27.69
Household services and operation	16.20	15.86	14.92	14.30	15.74	13.16	22.89	20.07	15.70
Medical care and health expenses	14.07	15.40	13.17	13.64	12.72	11.40	15.33	15.92	14.07
Transport (*c*)	57.22	61.92	58.24	54.89	62.47	47.59	68.47	80.93	59.00
Recreation	42.34	45.89	40.48	36.47	46.50	41.01	60.83	59.78	43.13
Personal care	6.74	6.89	6.01	6.72	6.24	5.70	7.01	7.87	6.60
Miscellaneous commodities and services	27.91	23.89	27.33	20.52	26.52	18.17	32.82	42.76	25.93
Total commodities or service expenditure	**373.31**	**370.31**	**340.58**	**324.18**	**360.01**	**311.90**	**463.46**	**472.38**	**361.84**
Selected other payments									
Income tax	82.35	85.35	69.32	67.63	81.82	66.06	106.55	131.49	80.07
Mortgage payments—principal (selected dwelling)	6.81	6.43	6.43	5.26	7.09	4.82	5.06	7.95	6.49
Other capital housing costs (*d*)	24.15	16.70	10.75	9.36	21.44	6.78	*25.82	*24.84	18.01
Superannuation and life insurance	10.93	12.07	11.14	10.75	11.47	10.53	19.77	23.25	11.51
HOUSEHOLD CHARACTERISTICS									
Average weekly household income ($)(*e*)	458.43	472.22	424.07	417.13	452.87	392.47	583.96	627.97	453.60
Average number of persons per household (number)	2.82	2.83	2.93	2.73	2.82	2.80	3.03	3.03	2.84
Average age of household head (years)	47.34	47.64	46.95	47.52	45.33	46.79	37.44	41.83	47.05
Number of households in sample	2,040	1,947	1,504	1,049	1,084	718	587	642	9,571
Estimated total number in population:									
Households ('000)	*1,766.9*	*1,320.6*	*794.5*	*461.6*	*450.9*	*144.5*	*26.0*	*74.3*	*5,039.2*
Persons ('000)	*4,983.9*	*3,737.1*	*2,329.8*	*1,261.7*	*1,269.7*	*404.7*	*78.8*	*225.2*	*14,290.9*

(*a*) The average obtained when the total estimated expenditure for a particular broad expenditure group is divided by the estimated number of households within the scope of the survey. (*b*) Excluded from this item are fuel and power for motor vehicles, which are included in *Transport*. (*c*) Includes fuel and power for motor vehicles. (*d*) Includes purchases of dwellings and other property; additions/extensions and renovations to dwellings; outside building and swimming pools; and payments to landscape contractors. (*e*) Household income is the sum of the gross weekly income of all household members. * Subject to sampling variability too high for most practical purposes.

AVERAGE WEEKLY HOUSEHOLD EXPENDITURE ON COMMODITIES AND SERVICES, AUSTRALIA, 1984



Distribution of income

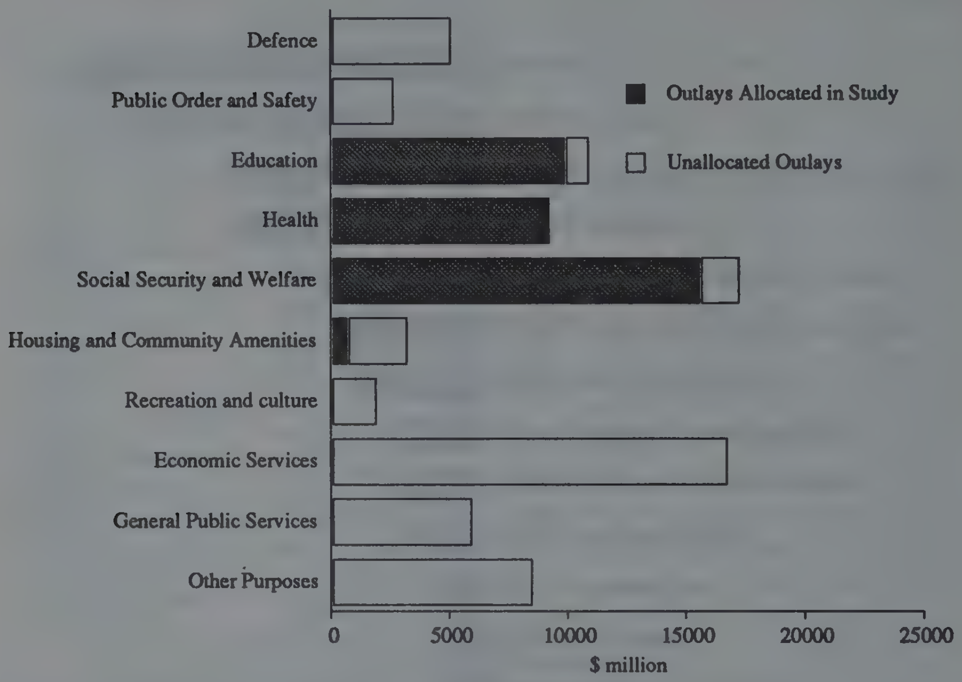
The effects of government benefits and taxes on household income

All households in Australia pay taxes to government, whether directly in the form of income tax and/or indirectly through taxes on goods and services purchased. Similarly, all households in Australia receive benefits from government, whether directly in the form of regular cash payments such as age pensions and/or indirectly in the form of a range of services which are provided to households either without charge or at less than their full cost to government. Using data from the 1984 Household Expenditure Survey, supplemented by data from other sources, the ABS undertook a study of the effects of government benefits and taxes on the distribution of income of households in 1984.

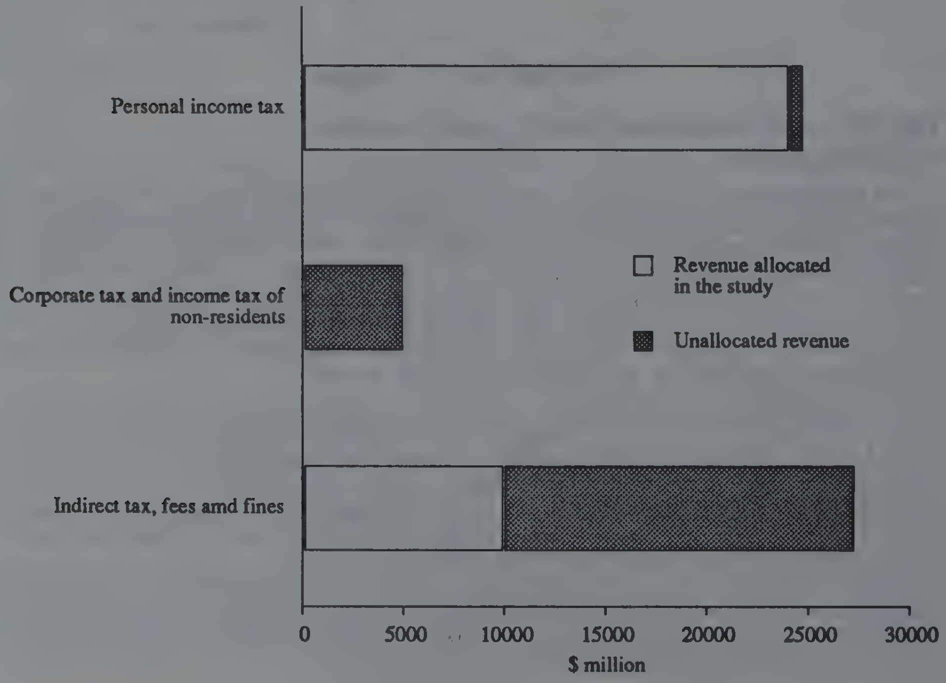
The methodological approach employed in this study is based on that used in similar studies conducted by the United Kingdom Central Statistical Office. The most that can be claimed for the approach is that it provides a useful framework within which a large body of information which is relevant to the assessment of the redistributive effects of transactions between households and governments can be drawn together. It is important to recognise that the estimates of the effects of government benefits and taxes on household income depend on the particular assumptions which have been made.

In the study, some major components of government outlays and revenues which affect households were allocated to the households which received the benefits or paid the taxes. The incidence of government benefits and taxes and their effects on average household income were then examined for various household groups.

GOVERNMENT OUTLAYS ALLOCATED AND UNALLOCATED, 1983-84
(Commonwealth, State and Local Government)



TAXATION REVENUE ALLOCATED AND UNALLOCATED, 1983-84
Commonwealth, State and Local Government



1984 HOUSEHOLD EXPENDITURE SURVEY AVERAGE INCOME, BENEFITS AND TAXES BY GROSS HOUSEHOLD INCOME DECILE

	Gross income decile										
Income, benefits and taxes	*Lowest 10%*	*Second decile*	*Third decile*	*Fourth decile*	*Fifth decile*	*Sixth decile*	*Seventh decile*	*Eighth decile*	*Ninth decile*	*Highest 10%*	*All house-holds*
					— Average weekly value ($) —						
Private income	**11.83**	**29.31**	**80.09**	**221.38**	**315.14**	**397.39**	**491.22**	**595.04**	**738.02**	**1,136.91**	**401.43**
Direct benefits:											
Age pension	51.10	51.78	39.85	11.36	5.74	5.66	4.87	4.58	3.54	3.10	18.16
Invalid pension	4.12	7.96	8.38	5.40	3.09	2.28	2.72	1.96	1.33	1.13	3.84
Veterans' Affairs pension	3.83	17.68	22.64	10.45	5.46	3.63	3.25	2.91	1.12	1.02	7.21
Unemployment benefit	5.48	11.92	22.33	13.51	7.49	5.67	3.49	3.87	2.95	3.25	8.01
Sole parent benefit	1.06	19.78	11.04	4.55	2.19	2.48	1.35	1.59	*	1.25	4.65
Family allowance	1.04	2.64	5.14	5.93	7.40	7.35	7.10	6.47	6.37	6.63	5.61
Other direct benefits	6.69	5.96	9.33	5.58	3.22	3.54	3.71	2.60	2.70	3.51	4.69
Total direct benefits	*73.33*	*117.72*	*118.71*	*56.77*	*34.59*	*30.60*	*26.49*	*23.98*	*19.17*	*19.89*	*52.18*
Gross income	**85.16**	**147.03**	**198.80**	**278.15**	**349.73**	**427.99**	**517.70**	**619.01**	**757.19**	**1,156.80**	**453.60**
Direct tax	*0.30*	*2.43*	*7.53*	*32.20*	*52.53*	*75.99*	*104.63*	*134.01*	*175.99*	*331.06*	*91.60*
Disposable income	**84.86**	**144.59**	**191.27**	**245.95**	**297.20**	**352.00**	**413.07**	**485.01**	**581.19**	**825.73**	**362.01**
Indirect benefits:											
School education	4.21	12.36	21.56	26.17	27.21	30.58	31.33	31.91	31.28	32.07	24.88
Tertiary education	2.03	3.37	6.45	9.02	7.56	9.28	11.11	12.88	14.92	24.71	10.13
Other education benefits	0.46	1.15	2.10	2.55	2.83	3.16	3.37	3.55	3.72	4.44	2.73
Total education benefits	6.70	16.88	30.12	37.73	37.60	43.02	45.81	48.34	49.92	61.22	37.74
Hospital care	18.49	24.46	25.42	21.83	22.28	22.42	22.58	22.74	24.05	26.47	23.08
Medical clinics	4.79	7.16	8.24	7.65	8.27	8.17	8.25	8.22	8.56	9.47	7.88
Pharmaceuticals	3.23	4.54	4.06	1.71	1.34	1.30	1.20	1.13	1.10	1.16	2.08
Other health benefits	1.00	1.58	2.01	2.11	2.33	2.39	2.46	2.48	2.56	2.94	2.19
Total health benefits	27.52	37.74	39.73	33.30	34.22	34.27	34.49	34.56	36.27	40.05	35.22
Housing benefits	4.30	5.12	3.01	3.01	3.27	3.62	1.95	0.72	0.76	0.19	2.59
Social security and welfare benefits	13.83	15.02	13.14	6.76	4.86	4.58	3.96	3.76	3.06	3.23	7.22
Total indirect benefits	*52.34*	*74.76*	*86.00*	*80.81*	*79.94*	*85.50*	*86.21*	*87.38*	*90.00*	*104.69*	*82.78*
Disposable income plus indirect benefits	**137.21**	**219.36**	**277.28**	**326.76**	**377.15**	**437.50**	**499.28**	**572.39**	**671.19**	**930.42**	**444.79**
Indirect taxes by commodity group:											
Petrol and petroleum products	2.16	3.35	5.03	5.83	7.14	7.58	8.59	9.28	10.63	12.72	7.23
Tobacco	1.52	2.16	2.95	3.54	3.42	3.91	3.88	3.84	4.20	4.35	3.38
Alcohol	1.17	1.47	2.28	3.23	3.43	4.44	4.84	5.60	6.18	8.58	4.12
Ownership of dwellings	1.80	2.01	2.16	3.10	3.61	4.03	4.30	4.39	4.89	5.69	3.60
Other indirect taxes	5.43	8.14	11.44	14.04	16.40	19.78	22.80	24.59	30.60	40.97	19.41
Total indirect taxes	*12.07*	*17.14*	*23.86*	*29.73*	*34.00*	*39.74*	*44.40*	*47.70*	*56.48*	*72.31*	*37.74*
Final income	**125.13**	**202.22**	**253.42**	**297.03**	**343.15**	**397.76**	**454.87**	**524.69**	**614.71**	**858.11**	**407.05**
Total benefits	*125.67*	*192.48*	*204.72*	*137.58*	*114.53*	*116.11*	*112.69*	*111.36*	*109.17*	*124.58*	*134.96*
Total taxes	*12.37*	*19.57*	*31.39*	*61.93*	*86.53*	*115.73*	*149.04*	*181.70*	*232.48*	*403.38*	*129.34*

To illustrate the effects of government benefits and taxes on household income, a series of income measures was calculated. The starting point of the analysis was *private income:* the total current weekly income of all members of the household before the deduction of taxes and excluding any government benefits. Private income includes income from employment, self-employment, investments and other non-government sources. Next, government direct benefits to persons, such as pensions and unemployment benefits, were added to private income to obtain *gross income.* Direct taxes were then deducted to obtain *disposable income.* Government indirect benefits for housing, education, health and social security and welfare were then added to give *disposable income plus indirect benefits.* Finally, indirect taxes paid were deducted to produce *final income.*

The following table shows the way in which the various income measures are related in the form of averages for all households and for two classes of households: those whose principal source of gross income was from private sources and those whose principal source of income was government pensions and benefits.

AVERAGE WEEKLY INCOME OF HOUSEHOLDS FOR VARIOUS INCOME MEASURES BY PRINCIPAL SOURCE OF GROSS INCOME OF THE HOUSEHOLD

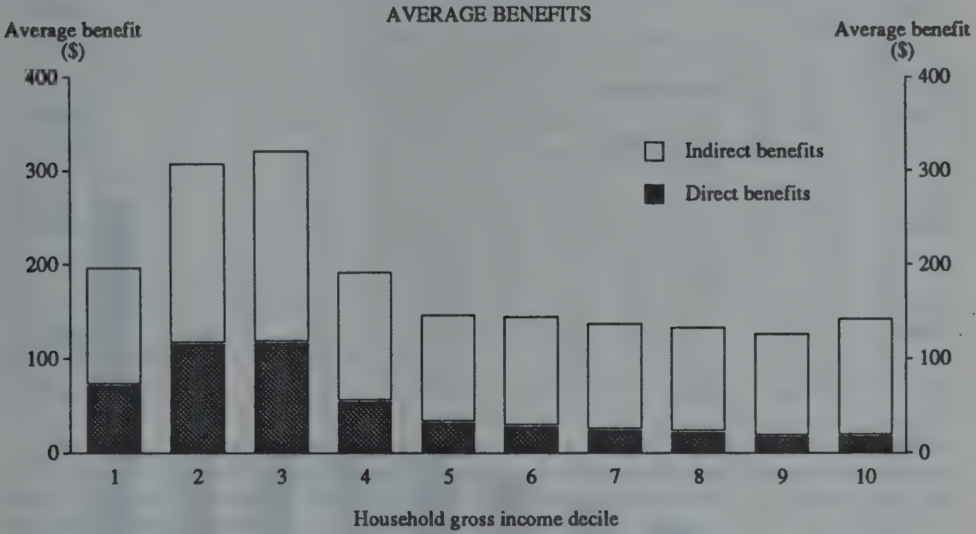
	Principal Source of Gross Income		
	Private income	*Government pensions and benefits*	*All sources*
	—Average Weekly Value ($)—		
Private income	537.38	19.32	401.43
plus Government direct benefits	21.69	137.85	52.18
Gross income	559.08	157.17	453.60
less Direct tax	123.29	2.52	91.60
Disposable income	435.78	154.65	362.01
plus Indirect benefits	83.62	80.43	82.78
Disposable income plus indirect benefits	519.40	235.08	444.79
less Indirect taxes	44.97	17.42	37.74
Final income	474.43	217.66	407.05
Total benefits	*105.31*	*218.28*	*134.96*
Total taxes	*168.26*	*19.94*	*129.34*

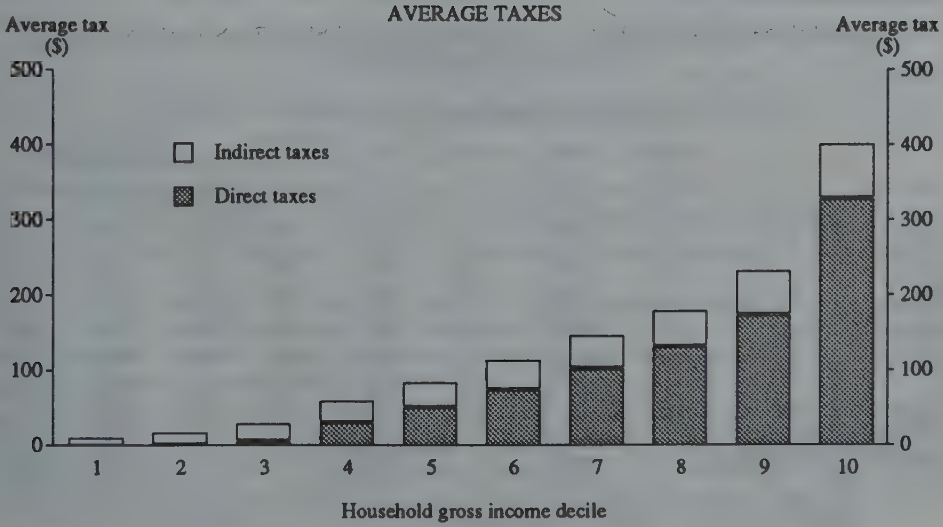
In this study the value of benefits allocated to households totalled $35,365 million while the total tax revenue allocated was $33,892 million. Translated into average values per household the value of benefits allocated was $134.96 per week and the amount of total taxes allocated was $129.34 per week.

The fact that the total amount of benefits allocated did not differ greatly from the total amount of taxation revenue allocated has no particular significance, since both totals simply represent the aggregate of those components which could be readily allocated. It does, however, have the incidental effect of enabling the balance of benefits and taxes relating to particular household groups to be comprehended more readily as a broad measure of the net redistributive impact of those government activities which are included in the study.

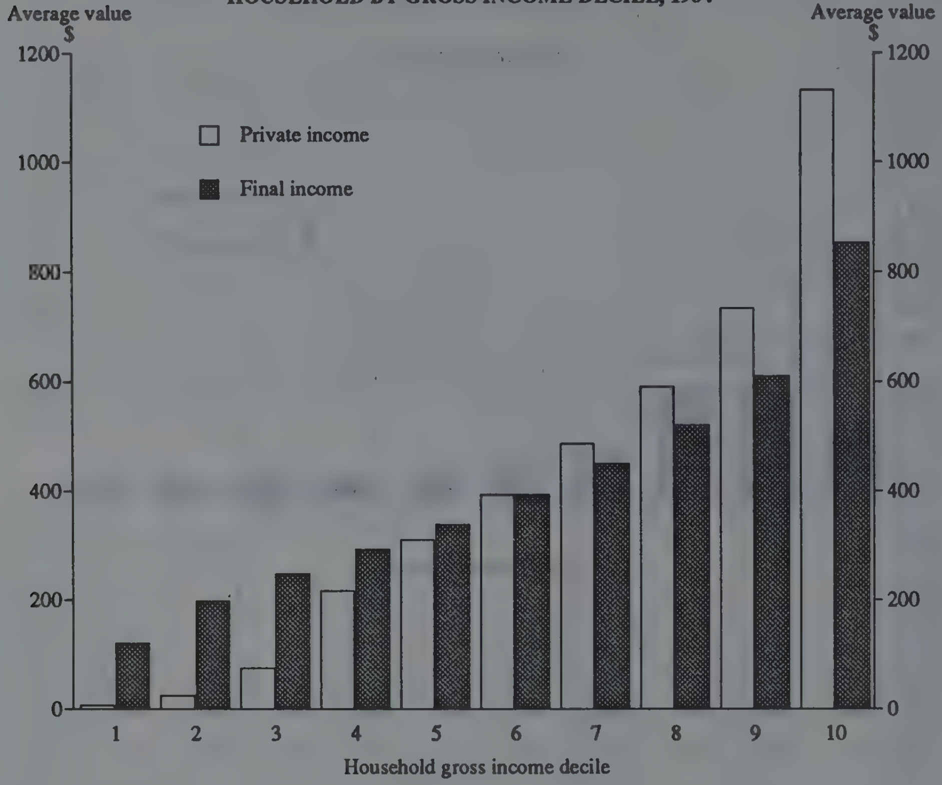
The following diagrams illustrate the effect that government benefits and taxes have on household income when households are ranked according to their gross income.

AVERAGE WEEKLY BENEFITS AND TAXES PER HOUSEHOLD BY GROSS INCOME DECILE, 1984





AVERAGE WEEKLY PRIVATE AND FINAL INCOME PER HOUSEHOLD BY GROSS INCOME DECILE, 1984



Income surveys

ALL INCOME RECIPIENTS: DECILE CLASSES, INCOME SHARE AND MEAN ANNUAL INCOME, AUSTRALIA, 1981–82

	Males		*Females*		*Persons*			
					Income share (per cent)		*Mean annual income ($)*	
Decile class	*Income share (per cent)*	*Mean annual income ($)*	*Income share (per cent)*	*Mean annual income ($)*	*1978–79*	*1981–82*	*1978–79*	*1981–82*
Lowest	1.8	2,500	0.4	300	0.5	0.5	390	600
2nd	3.0	4,300	1.3	900	2.2	2.4	1,610	2,600
3rd	4.7	6,700	3.6	2,400	3.6	3.6	2,680	3,800
4th	6.9	9,700	5.3	3,500	4.8	4.7	3,540	5,000
5th	8.7	12,200	6.2	4,200	7.0	6.9	5,230	7,200
6th	10.1	14,200	8.0	5,400	9.8	9.5	7,300	10,000
7th	11.5	16,200	11.0	7,400	12.2	12.0	9,080	12,600
8th	13.3	18,700	14.9	10,000	14.5	14.5	10,790	15,100
9th	15.7	22,100	19.2	12,900	17.7	17.8	13,190	18,700
Highest	24.4	34,300	30.1	20,300	27.8	28.1	20,700	29,400
Median annual income ($)		13,200		4,600			6,300	8,500
Mean annual income ($)		14,100		6,700			7,500	10,500
Numbers ('000)		5,066.4		4,858.6			9,590.4	9,925.1

ALL INCOME UNITS: DECILE CLASSES, TYPE OF INCOME UNIT, INCOME SHARE AND MEAN ANNUAL INCOME, AUSTRALIA, 1981–82

	Married couple income units								*All income units*			
	With no dependent children		*With dependent children*		*One parent income units*		*On person income units*		*1981-82*		*1978-79*	
Decile class	*Income share (per cent)*	*Mean annual income ($)*	*Income share (per cent)*	*Mean annual income ($)*	*Income share (per cent)*	*Mean annual income ($)*	*Income share (per cent)*	*Mean annual income ($)*	*Income share (per cent)*	*Mean annual income ($)*	*Income share (per cent)*	*Mean annual income ($)*
Lowest	2.6	5,000	2.8	6,500	2.6	2,300	2.0	1,900	1.7	2,700	1.7	2,000
2nd	3.6	6,800	5.3	12,100	4.8	4,300	3.9	3,700	2.9	4,500	2.9	3,300
3rd	4.3	8,100	6.6	15,000	5.7	5,100	4.4	4,200	4.2	6,500	4.2	4,800
4th	5.7	10,800	7.6	17,400	6.2	5,500	5,3	5,100	5.6	8,700	5.8	6,600
5th	7.6	14,300	8.6	19,600	6.9	6,100	7.2	6,800	7.4	11,500	7.6	8,600
6th	9.5	17,900	9.6	21,900	7.9	7,000	9.4	8,900	9.2	14,200	9.3	10,500
7th	11.5	21,700	10.8	24,800	10.0	8,900	11.7	11,100	11.2	17,300	11.3	12,700
8th	13.8	26,000	12.3	28,200	13.0	11,600	13.9	13,200	13.6	21,100	13.8	15,600
9th	16.5	31,100	14.5	33,300	17.0	15,200	16.7	15,900	17.2	26,600	17.0	19,300
Highest	25.0	47,200	22.0	50,500	25.8	22,900	25.4	24,200	27.0	41,700	26.4	29,800
Median annual income ($)		16,000		20,700		6,500		7,800		12,900		9,600
Mean annual income ($)		18,900		22,900		8,900		9,500		15,500		11,300
Numbers ('000)		1,439.8		1,956.1		275.2		2,962.2		6,633.4		6,325.9

Surveys of income have been conducted by the ABS at irregular intervals. In the last such survey, conducted in the period September to December 1986, income was collected both on a last financial year basis, that is in respect of 1985–86, and on a current basis, that is at the time of interview.

As has been customary in such surveys, income was collected in respect of each of the following sources: wages or salaries; own business, trade or profession; government cash benefits; superannuation; interest, rent dividends; other sources. These were then aggregated to arrive at total income.

The survey was designed to enable the production of estimates both for individuals and for groups of individuals such as income units, families and households. Preliminary results were released in late 1987. Summary results from the 1981–82 survey have been released in the ABS publications, *Income of Individuals, Australia, 1981–82* (6502.0) and *Income of Income Units, Australia, 1981–82* (6523.0). Detail of concepts, definitions, etc. employed in the survey and observations on the quality and reliability of the data can be found in these publications.

Further detail from these surveys can be found in *Year Book* No. 69.

Welfare-related surveys conducted by the ABS

Disability and ageing

1981 Survey of Handicapped Persons

During February to May 1981 a survey was conducted throughout Australia to obtain information about the nature and extent of various disabilities and handicaps in the Australian community.

The Survey examined the needs of, and the kinds of problems experienced by, persons with different types of handicaps. The areas examined in respect of handicapped persons included causes, disabling conditions, services, aids, accommodation, employment, education, income, transport, recreation and institutionalised care.

The sample for the Survey consisted of two distinct parts. In the first part, a sample of 33,000 households was selected from all households in Australia and in the second part, a sample of 5,300 patients or residents was selected from 723 randomly selected health establishments throughout Australia.

Results of the Survey are published in *Handicapped Persons, Australia* (4343.0).

1988 Survey of Disability and Ageing

The Australian Bureau of Statistics conducted a survey throughout Australia in early to mid-1988 to obtain information about the characteristics of disabled and aged people and their requirements for care. In common with the 1981 Survey of Handicapped Persons, the Survey comprised two parts. The first covered people living in a sample of households. The second covered residents and patients living in selected health establishments in Australia, for example, nursing homes and other aged persons' accommodation.

The Survey aimed to identify disabled and handicapped people and their abilities and requirements for help with a number of activities of personal and household daily living, for example, showering/bathing and light housework. Data relating to handicapped and disabled people are directly comparable with the 1981 Survey of Handicapped Persons with respect to numbers, causes of handicap, disabling conditions, employment, education and income.

The Survey also collected data on the care requirements of non-disabled people aged sixty years or more for the household activities of daily living. A small amount of information was also asked of those people who live with a disabled person and who are the main providers of help to that person with the personal activities of daily living.

Final survey results are expected to be released in the second half of 1989.

Other social groups

1982 Family Survey

During the period March to June 1982 a survey was conducted to obtain information on the formation, growth, break-up and reformation of families, and also on the manner in which families function.

Information obtained in the Survey included:

- size and composition of the family;
- age, sex, marital history and other demographic characteristics of persons;
- accommodation cost, type, occupancy and mobility;
- income levels and sources;
- family support networks as illustrated by frequency of contact with absent parents, support received by the aged, child care arrangements;
- financial assistance with home purchase.

The 1982 Family Survey was based on a sample of private dwellings (about 15,000 houses, flats, etc.) and non-private dwellings (hotels, motels, etc.) and covered about one-third of one per cent of the population of Australia.

Results of the survey are published in *Australian Families, 1982* (4408.0).

Survey of Ex-Service Personnel and Widows

In June 1984, the ABS conducted a survey to obtain information on ex-service personnel and widows of those who served in the Australian Armed Forces and Allied Defence Forces during war-time. Results of the Survey have been released in the publication *Ex-service Personnel and Widows, Australia, June 1984* (4404.0).

HISTORY OF PENSIONS AND OTHER BENEFITS IN AUSTRALIA

(*This special article has been contributed by the Department of Social Security*)

At the turn of the century there was no social security system in Australia. Charitable relief was provided to needy persons by voluntary organisations, in some cases with the assistance of government grants.

The main areas of need which attracted charitable assistance were the 'sick poor', neglected children, old people who were destitute and women who had been deserted or who had 'fallen' pregnant. The unemployed were assisted by grants of wages, or rations, in return for relief work provided by the government.

The beginnings

The Commonwealth of Australia was formed on 1 January 1901 by federation of the six States under a written constitution which, among other things, authorised the new Commonwealth Parliament to legislate in respect of age and invalid pensions. In the event, the Commonwealth did not exercise this power until June 1908 when legislation providing for the introduction of means-tested 'flat-rate' age and invalid pensions was passed. The new pensions, which were financed from general revenue, came into operation in July 1909 and December 1910 respectively, superseding State age pension schemes which had been introduced in New South Wales (1900), Victoria (1900) and Queensland (1908) and an invalid pension scheme introduced in New South Wales (1908).

The new pension was paid to men from age 65. It was paid to women at age 60, but not until December 1910. The age pension was also subject to a residence qualification of 25 years which was reduced to 20 years shortly after introduction. A residence qualification of five years applied to the invalid pension.

In 1912 the Commonwealth introduced a maternity allowance. This allowance was a lump sum cash grant payable to a mother on the birth of a child.

1914–1940

No new Commonwealth social security payments were introduced until World War II. There were, however, several notable developments in the States, including: in New South Wales, the introduction of widows' pensions in 1926 and child endowment in 1927; and in Queensland the introduction of an unemployment insurance scheme in 1923.

The principal changes in age and invalid pensions during this period were in the rates and the means test. A provision for automatic increases in pension rates on the basis of changes in the cost of living was introduced in 1933, repealed in 1937 and reintroduced in 1940. Measures which would have placed pensions on a social insurance basis and introduced a number of new cash payments were proposed in 1928 and 1938 but were not implemented.

The Commonwealth Department of Social Services was created in 1939 and became fully operative in 1941. Pensions had previously been administered within the Department of the Treasury.

1941–1949

Child endowment was introduced in 1941. This provided a regular flat-rate cash payment, free of means test, to parents (usually the mother) for children after the first child. The New South Wales child endowment scheme was abolished at the same time.

Widows' pensions were introduced in 1942. As in the case of age and invalid pensions they were flat-rate means-tested payments financed from general revenue. Those eligible included deserted wives, divorced women, and women whose husbands were in prison or a mental hospital. A residence qualification of five years applied. The new scheme superseded the New South Wales widows' pension.

There were several developments in 1943. Funeral benefits were introduced; these were lump sum grants payable for the funeral costs of a pensioner. Wife's allowance was introduced for an incapacitated male pensioner with a dependent spouse. A reciprocal agreement on social security was concluded with New Zealand. In addition, automatic cost-of-living adjustments to pension rates were repealed when their application would have resulted in a rate reduction.

There was a major extension of the social security system in 1945 with the introduction of Commonwealth unemployment and sickness benefits in the form of flat-rate payments financed from general revenue and subject to an income test. The Queensland scheme of unemployment insurance was superseded by the new benefits. The introduction of these new benefits took place against a background of major changes in the revenue-raising functions of the Commonwealth and the States. The Commonwealth took sole responsibility for income tax in 1942, and thus expanded substantially its capacity to raise revenue. While the exigencies of World War II had much to do with this change, its broader effect was to facilitate an expansion of the Commonwealth's role in social security as in other areas.

There was a further development of specific relevance to social security in 1945. The Commonwealth split the personal income tax into two components. One, the social services contribution, was to be used exclusively to finance social security cash payments. Revenue from the contribution was paid into the National Welfare Fund, from which all such cash payments were to be made, but there was no link between personal contributions and entitlements. The fund was supplemented by subventions from payroll tax and general revenue. In the event, the social services contribution was again merged into a single personal income tax in 1950. All cash payments are now made direct from general revenue.

Doubts had arisen during the early forties about the constitutional validity of the Commonwealth legislation in respect of cash payments other than age and invalid pensions, which were specifically within the powers of the Commonwealth. Accordingly, a referendum was held in 1946 under which the Commonwealth sought an extension of its powers in the areas of social security and health. The referendum was carried. In 1947 the various social security cash payments were consolidated into a single Social Services Act.

1950–1969

In 1950 child endowment was extended to cover the first child. It was further extended in 1964 to cover children who, after reaching the normal disqualifying age of 16, continued as full-time students but were aged under 21.

The Pensioner Medical Service was established in 1951. In effect, it provided free medical treatment to pensioners through participating doctors who were paid a fee for treating pensioners free of direct charge. The service also made free hospital treatment available to pensioners.

In 1952 the means test on age and invalid pension eligibility was largely removed for permanently blind people. It was completely removed in 1954.

A reciprocal agreement on social security was concluded with the United Kingdom in 1953.

In 1956 pensioners with more than one child became entitled to additional pension for each child after the first. Previously, an allowance had been payable only for the first child.

Supplementary assistance (now known as rent assistance) was introduced in 1958 for a single pensioner paying rent, and wholly or substantially dependent on his or her pension. A married pensioner whose spouse was not a pensioner was also eligible.

A major change took place in the pension means test in 1961. The separate property and income tests, which previously had formed the means test, were combined into a composite whole called the merged means test under which means were calculated by adding personal earnings to 10 per cent of the value of property.

In 1962 there was a reduction from 20 to 10 years in the residence qualification for age pension.

A standard rate of pension was introduced in 1963. Before that, the maximum rate of pension for a single person was the same as for a married person. The new standard rate gave single pensioners a higher payment in recognition of the economies available to a married couple from sharing living expenses. Also in 1963 a payment known as mother's allowance was added to the rate of widow's pension. In 1965 an equivalent payment was extended to single age and invalid pensioners with children.

In 1965 wife's allowance was extended to cover any pensioner's wife not herself entitled to a pension. Previously it was payable only if the pensioner was incapacitated.

Sheltered employment allowance was introduced in 1967 for persons employed in sheltered workshops and qualified to receive invalid pension. The allowance was payable as a supplement to the sheltered employee's workshop earnings in lieu of invalid pension, but at the same rate. A more liberal means test applied to the allowance than to invalid pension but was superseded by the tapered means test in 1969.

A concession commonly called 'special temporary allowance' was introduced in 1968 to assist pensioners on the death of a spouse. In effect, the allowance provided for the continuing payment, for 12 weeks after the death of the spouse, of the total pension payable to the couple.

Also in 1968 the residence qualification of five years for widow's pension was abolished in respect of women becoming widows while living in Australia. In the same year the Commonwealth agreed to subsidise the States to assist mothers with the sole care of children and not eligible for widow's pension.

A major liberalisation of the pension means test took place in 1969. The rate of reduction in pension was changed from 100 per cent to 50 per cent of the amount by which a pensioner's means exceeded the maximum level not affecting the pension rate. The new arrangement became known as the 'tapered means test'. It was accompanied by a measure to restrict the availability of the Pensioner Medical Service. Under this measure, people who qualified for pensions only because of the tapered means test did not become entitled to Pensioner Medical Service benefits as well.

1970 onwards

The earlier part of this period saw an expansion of existing provisions. The latter part has been one of consolidation and rationalisation. The major events are described below.

Introduction and abolition of benefits

In 1970 a 'long-term rate' of sickness benefit became payable after six weeks in receipt of benefit. At the same time such beneficiaries paying rent became eligible to receive a supplementary allowance (now known as rent assistance). The long term rate was absorbed in 1973.

The wife's allowance was replaced by wife's pension in 1972. The new pension was payable to an age, invalid or repatriation service pensioner's wife who was not entitled to a pension herself.

In 1973 supporting mother's benefit was introduced for single mothers not entitled to widow's pension. The new benefit was payable after a six-month waiting period, during which time the States remained responsible for the single mother's income support under the Commonwealth–State cost-sharing arrangements introduced in 1968. The supporting mother's benefit was extended in 1977 to single fathers, including widowers and divorcees, and renamed supporting parent's benefit. The six-month waiting period for this benefit was abolished in 1980 when the States withdrew from the Commonwealth–State cost-sharing arrangements. The six-month waiting period still applying to certain categories of widow's pension was also abolished in 1980.

Also in 1973 a double orphan's pension was introduced for the guardian of a child whose parents are both dead. The pension is a flat-rate non-income-tested payment.

In 1974 a free-of-income-test, flat-rate payment called handicapped child's allowance was introduced. This was for parents of severely handicapped children requiring constant care and attention at home. The allowance was extended to cover less severely handicapped children in low-income families in 1977.

Family allowances were introduced in 1976. This was effected by substantially increasing child endowment rates, extending eligibility for students to include those aged 21 to 24 years (inclusive), and abolishing tax rebates for children and students. Low-income families gained substantially from these changes.

The spouse carer's pension was introduced in 1983. It was payable to a man caring for his severely handicapped or invalid wife who required constant care and attention in the matrimonial home. In 1985 it was subsumed by the carer's pension which provides income support to a person with limited means who is providing constant and long-term care to a severely disabled spouse or near relative receiving an age or invalid pension.

Also in 1983, Family Income Supplement (FIS) was introduced in the form of an income-tested, non-taxable allowance payable in respect of children to the main breadwinner in low-income families not receiving a pension or benefit. Payment was transferred to the family allowance recipient (usually the mother) in 1984.

Two other new payments were introduced in 1983. Mobility allowance became payable to severely handicapped persons unable to use public transport, and rehabilitation allowance (broadly equivalent to an invalid pension) became payable to persons assisted through the Commonwealth Rehabilitation Service.

Remote area allowance was introduced in 1984. This allowance is payable to pensioners and beneficiaries who reside in specified areas of Tax Zone A.

In 1985 payment of family allowance in respect of student children who have attained the age of 18 was discontinued, except in the case of certain low-income families. An income test was introduced in 1987 on family allowance for students aged 16 and 17. A special addition to family allowances became payable in 1985 to certain families with multiple births (three children or more) until the children reach six years of age.

Rent assistance was extended to unemployment beneficiaries in 1986.

Young homeless allowance was introduced in 1986 to provide additional assistance to unemployment and sickness beneficiaries under 18 years who are homeless and without parental or custodial support.

Fringe benefits changes

In 1973, the conditions of eligibility for access to the Pensioner Medical Service (now Pensioner Health Benefits) were tightened by freezing the disqualifying levels of income. These limits remained frozen untill 1979. Further increases in the limits took place in 1979 and 1982. Automatic indexation was introduced in 1983.

Eligibility for Pensioner Health Benefits, and all associated Commonwealth fringe benefits, was extended to recipients of supporting parents' benefits in 1979 and sickness benefits in 1980. Entitlement to only a limited range of fringe benefits had been originally granted to supporting mothers and later, supporting fathers.

In 1983, the basic income limits applicable to persons eligible for 'fringe benefits' became indexed in line with movements in prices. Also in 1983, people who gave up an invalid pension or sheltered employment allowance to take up open employment became eligible for Health Care Cards free of income test for a period of 12 months. The aim was to improve incentives for invalid pensioners to re-enter the open workforce. In 1985 fringe benefits were made subject to an assets test as well as the income test. The assets test limits are indexed annually in line with price movements.

Means tests

The pension means test has undergone several significant changes since 1970. It was abolished for pensioners aged 75 and over in 1973 and for pensioners aged 70 and over in 1975. The means test was replaced by an income test in 1976. In 1978 the rate of the free-of-income-test age pension for those aged 70 years and over was frozen. In 1983 this frozen rate became subject to a special income test which will eventually be overtaken by the normal income test.

An assets test on pensions was introduced in 1985. It operates alongside the income test. Assets test limits are increased in line with price movements.

The income test for unemployment and sickness benefits was liberalised several times between 1980 and 1986.

Indexation and rates

In 1973 the single and married rates of unemployment and sickness benefits were increased for all age groups to bring them up to an appropriate standard equivalent to the married rates of pension. The long-term sickness benefit rate was superseded by this measure.

The pension and benefit rates were increased in 1975 in line with price movements, except in the case of unemployment and sickness benefits for single people aged under 18. In 1977, this link became automatic.

Indexation was withdrawn from the rate of unemployment benefit for single persons 18 years and over in 1978. It was restored in 1983 but again withdrawn for those aged 18, 19 and 20 years in 1985. Ad hoc increases have been granted for those beneficiaries since, and further steps announced are designed to integrate unemployment benefits for persons under 21 with education allowances.

Portability and residence

In 1972 reciprocal (pension portability) agreements were concluded with Italy, Greece, Turkey and Malta. These were superseded in 1973 by the introduction of general portability of Australian pensions.

In 1974 the residence test applying to invalid pension was abolished for persons whose permanent incapacity or blindness occurred in Australia.

Pensions granted after 1 July 1986 are now subject to a residence proportion formula for portability purposes.

Other benefits

In conclusion, it should perhaps be added that the private sector continues to play an important role in the provision of financial support to people in major contingencies. Private employers are required by State government legislation (and equivalent measures in the Commonwealth Territories) to insure their employees against work injuries and specified occupational diseases; industrial awards usually provide for a measure of paid sick leave; and occupational pension schemes are becoming increasingly available to employees.

Employees in the public sector are also entitled to work injury benefits and paid sick leave, which are financed from general revenue. They are also covered by occupational pension schemes to which the government (as the employer) and employees both contribute.

Coverage against the financial consequences of road injuries is provided through insurance (third party insurance is compulsory for motorists). A large volume of life insurance is also written.

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CHAPTER NINE

HEALTH

This chapter is primarily concerned with the activities of the Commonwealth relating to health. There is, however, government responsibility for health at the State and local levels. There are constitutional limits on the Commonwealth Government's role in the health care field, and the primary responsibility for planning and provision of health services is with the State and Territory governments.

At the national level, health services in Australia are administered by the Commonwealth Government. The government appoints a Minister who exercises political control over the Commonwealth Department of Community Services and Health. The Commonwealth Government is primarily concerned with the formation of broad national policies, and influences policy making in health services through its financial arrangements with the State and Territory governments, through the provision of benefits and grants to organisations and individuals, and through the regulation of health insurance.

The direct provision of health services, broadly speaking, is the responsibility of the State governments. Each of the States and the Northern Territory has a Minister who is responsible to the government of his particular State or Territory for the administration of its health authorities. In some States, the responsibility for health services is shared by several authorities whilst in others, one authority is responsible for all these functions.

Health care is also delivered by local government, semi-voluntary agencies, and profit making non-governmental organisations.

A.C.T. Health Authority

In addition to its national responsibilities, the Commonwealth Government, through the A.C.T. Health Authority, has special responsibility for health services in the Australian Capital Territory. The Authority, which is primarily funded through Commonwealth appropriations, has the statutory role of providing and monitoring health services in the A.C.T.

Health services provided by the Authority include:

- Hospital services—the Authority operates Royal Canberra and Woden Valley Hospitals within the A.C.T. public hospital system. These hospitals offer an extensive range of general and speciality medical services. Calvary Hospital and the Queen Elizabeth II Home for Mothers and Babies are funded through the Authority's grant-in-aid program, and function within the public hospital system.
- Community services—the Authority is responsible for health care delivery in the community, including health centres (twelve as at 30 June 1987), child health clinics and home nursing services. Other community health services provided by the Authority include ambulance services, health education, school dental and speech therapy services, and health and pharmaceutical inspection services. The Authority also provides a range of programs to service the mental health needs of the community, and the special health needs of other groups in the community such as the elderly, the physically handicapped, the intellectually handicapped and those with alcohol or drug dependence.

At 30 June 1987, the Authority had a staff of 3,516 full-time and 1,158 part-time employees.

Further information about the operations of the Authority and the services it provides is contained in Authority annual reports.

Commonwealth health benefits and assistance

In previous issues, information on Commonwealth Nursing Home and related benefits was contained in this chapter. Such information is now provided in Chapter 8, Social Security and Welfare.

Medicare

Details of the health financing arrangements under the Medicare program introduced by the Commonwealth Government in February 1984 are available in *Year Book* No. 68.

Since the introduction of the Medicare program the income thresholds on which the levy is payable have been revised. From 1 December 1986 no levy was payable by single people earning $8,030 per annum or less, or by married couples and sole parents with a combined income of $13,370 per annum or less, with a further $1,660 per annum allowed for each dependent child.

'Shading-in' arrangements apply in respect of persons with taxable incomes marginally above the threshold.

The levy was increased from 1 per cent to 1.25 per cent of taxable income on 1 December 1986.

Medicare benefits

The Health Insurance Act provides for a Medicare Benefits Schedule which lists medical services and the Schedule (standard) fee applicable in respect of each medical service. The Schedule covers services attracting Medicare benefits rendered by legally qualified medical practitioners, certain prescribed services rendered by approved dentists and optometrical consultations by participating optometrists. Schedule fees are set and updated by an independent fees tribunal which is appointed by the government. The fees so determined are to apply for Medicare benefits purposes. Medical services in Australia are generally delivered by either private medical practitioners on a fee-for-service basis, or medical practitioners employed in hospitals.

Where a medical service is provided by a private medical practitioner on a fee-for-service basis, Medicare refunds at least 85 per cent of the Schedule fee applicable to that service. From 1 November 1986, the 'gap' between Medicare benefits and the Schedule fee was increased from a maximum of $10 per service to a maximum of $20 per service.

For medical services rendered to an insured person in a hospital or a day hospital facility, the gap is covered by benefits under the basic insurance table operated by health benefits organisations. Gap benefits are not payable for out-of-hospital medical services. However, where accumulated gap payments for these services exceed $150 in a year, further services attract Medicare benefits equal to 100 per cent of the Schedule fee.

Under Medicare, medical practitioners are able to direct bill for any patient. In such cases, they receive the Medicare benefit as full payment.

Hospital care

From 1 February 1984, basic public hospital services have been provided free of charge. Under Medicare, out-patient treatment and in-patient accommodation and care in a shared ward by a doctor employed by a hospital are provided free of charge. The scheme does not cover hospital charges for private accommodation in a public hospital, private hospital treatment, nor care in a public hospital by a doctor of the patient's choice. It is possible however for persons to take out insurance with registered health benefits organisations to cover these situations and medical benefits are available for private medical practitioners charges.

Patients who are accommodated in either private or public hospitals for continuous periods in excess of 35 days and who are, in essence, nursing home type patients, are required to make a statutory non-insurable patient contribution in the same way that a patient in a nursing home does. For a private patient in a public hospital, health benefits paid by registered benefits organisations are reduced to the level of the standard nursing home benefit. However, because of the reduced fees charged by public hospitals, such patients are only liable for the amount of the statutory non-insurable patient contribution. In a private hospital, the benefits are reduced to $100 a day, less the amount of the patient contribution. Any charges by private hospitals in excess of available benefits plus the statutory patient contribution become the responsibility of the patient.

Where a patient's doctor considers that a patient has continuing need for acute hospital care, the doctor may issue a certificate under section 3B of the Health Insurance Act to that effect, and the nursing home type patient arrangements do not apply. The new arrangements provide for a review mechanism in the form of the Acute Care Advisory Committee which, when requested (e.g. by a private health fund) to do so, may review such certificates and recommend that they be varied or revoked.

Private hospitals

Coinciding with the introduction of Medicare on 1 February 1984, Commonwealth bed day subsidies and health insurance benefits were paid according to a system of classifying private hospitals into three categories. The three categories of private hospitals were determined on the basis of the services and facilities provided. Those hospitals with more sophisticated services and facilities attracted higher levels of health insurance benefits and Commonwealth bed day subsidies.

The States have always had primary responsibility for the planning and provision of health services and facilities within their respective boundaries. However, associated with private hospital categorisation, the Commonwealth also had a responsibility, in consultation with the States, for the approval and categorisation of private hospital facilities. Because of this overlap of responsibilities, the Commonwealth decided to discontinue its regulatory controls in the private hospital sector from 1 October 1986, leaving the States with the sole authority over such matters. Also, in the context of budgetary considerations, Commonwealth subsidisation of the private hospital sector through bed day subsidies ceased from 1 October 1986.

Acting on the recommendations of the private hospital and health insurance industries, the Commonwealth approved a system of classifying patients in private hospitals for health insurance benefits purposes. The patient classification system was introduced on 1 March 1987 and replaced the private hospital categorisation arrangements. Patient classification more appropriately relates health insurance benefits to the actual costs of providing hospital services necessary to the treatment of patients' conditions.

From 1 March 1987, three classes of private hospital patients were declared for health insurance benefits purposes. These are advanced surgical, surgical/obstetrical and 'other' patients. Differential levels of benefits are payable in relation to a patient's classification and step down periods (i.e., lengths of stay in hospitals) also apply to each classification. Advanced surgical patients, and surgical/obstetrical patients, are defined according to specified medical procedures as contained in the Medicare Benefits Schedule.

Pharmaceutical Benefits Scheme

The Pharmaceutical Benefits Scheme, established under the provisions of the National Health Act, provides a comprehensive range of drugs and medicinal preparations which may be prescribed by medical practitioners for persons receiving medical treatment in Australia. In addition, there is a limited range of antibiotic, antibacterial, analgesic and antifungal preparations which may be prescribed by dental practitioners for the treatment of patients. The drugs and medicines are supplied by an approved chemist upon presentation of a prescription from the patient's medical or dental practitioner, or by an approved hospital to patients receiving treatment at the hospital.

From 1 November 1986 patient contribution arrangements were as follows:

- *free of charge*—the holders of a Pensioner Health Benefits Card, Health Benefits Card, Dependant Treatment Entitlement Card or Service Pension Benefits Card and their dependants receive benefit items free of charge;
- *$2.50 per benefit item*—people in special need who hold a Health Care Card and their dependants, and those Social Security pensioners and Veterans' Affairs service pensioners who do not hold a PHB card and their dependants, pay a contribution of $2.50 per benefit item;
- *$10 per benefit item*—all other people pay a contribution of $10 per benefit item.

At the same time, a scheme was introduced to provide protection for the chronically ill high drug user by placing a ceiling on the amount which could be paid by an individual or family for pharmaceutical benefits in a calendar year. Under the new arrangements, a person or family group who uses more than 25 pharmaceutical benefit prescriptions in a calendar year qualifies for an entitlement to free pharmaceutical benefits for the remainder of that year.

In order to qualify for free pharmaceutical benefits under the 'safety net' arrangements, general or concessional patients may record each pharmaceutical benefit supplied on a prescription record form, obtainable from any pharmacy. After the supply of 25 prescriptions has been recorded, the form or forms may be presented to a pharmacy or any office of the Commonwealth Department of Community Services and Health for issue of a Pharmaceutical Benefits Entitlement Card conveying entitlement to free pharmaceutical benefits for the remainder of the year.

The first entitlement period ran from 1 November 1986 to 31 December 1987. Thereafter, the entitlement period will run from 1 January to 31 December.

Under the Pharmaceutical Benefit Scheme the total cost, including patient contribution of prescriptions processed for payment was $903.7 million in 1986–87. This figure does not include the cost of drugs supplied in certain psychiatric centres and geriatric centres or the cost of pharmaceutical benefits supplied through special arrangements, such as Royal Flying Doctor Service (RFDS), Bush Nursing Centres and hormone treatment programs.

BENEFIT PRESCRIPTIONS AND COST OF MORE FREQUENTLY PRESCRIBED DRUG GROUPS, AUSTRALIA, 1986–87

	Benefit prescriptions		*Total cost of benefit prescriptions(a)*	
Drug group	*Number*	*Percentage of total*	*Amount*	*Percentage of total*
	'000	%	$'000	%
Analgesics	14,161	13.8	109,383	12.1
Heart—drugs acting on	9,126	8.9	101,187	11.2
Diuretics	8,012	7.8	46,232	5.1
Bronchial spasms—preparations for	7,738	7.5	70,349	7.8
Blood vessels—drugs acting on	6,225	6.1	107,349	11.9
Penicillins	5,635	5.5	41,528	4.6
Anovulants	4,542	4.4	33,798	3.7
Tranquillisers	3,962	3.9	20,554	2.3
Antidepressants	3,333	3.2	19,816	2.2
Tetracyclines	3,078	3.0	22,387	2.5
Sulphonamides	3,062	3.0	21,056	2.3
Hypnotics and sedatives	3,016	2.9	12,796	1.4
Eye drops	3,006	2.9	20,765	2.3
Antacids	2,547	2.5	13,202	1.5
Water and electrolyte replacement	2,402	2.3	15,643	1.7
Skin sedative applications	2,309	2.2	11,564	1.3
Other drug groups	20,608	20.1	236,115	26.1
Total	**102,762**	**100.0**	**903,724**	**100.0**

(*a*) Includes patients' contributions. Excludes Government expenditure on pharmaceutical benefits provided through miscellaneous services.
Source: Commonwealth Department of Community Services and Health.

Summary of personal benefit payments

For an analysis by purpose and economic type of expenditure by all Commonwealth Government authorities *see* Chapter 24, Public Finance.

Most Commonwealth Government health benefits are financed through the National Welfare Fund and the Health Insurance Commission. The following table shows personal benefit payments by Commonwealth Authorities for 1984–85 and 1985–86.

COMMONWEALTH AUTHORITIES: PERSONAL BENEFIT PAYMENTS—HEALTH
($ million)

	N.S.W.(a)	*Vic.*	*Qld*	*S.A.(a)*	*W.A.*	*Tas.*	*Total*
		1984–85					
Hospital and other institutional services and benefits	252.3	214.2	83.9	63.3	51.7	13.1	678.5
Nursing homes	244.6	207.9	81.4	61.2	49.7	12.5	657.3
Hospital benefits	7.7	6.3	2.5	2.1	2.0	0.6	21.2
Clinic and other non-institutional services and benefits	981.3	571.0	351.2	207.2	179.5	56.1	2,346.4
Clinic and other non-institutional services n.e.c.	10.6	7.7	4.8	1.8	2.6	1.3	28.8
Medical benefits	970.7	563.3	346.4	205.4	176.9	54.8	2,317.6
Public health	3.5	0.6	3.9	3.0	2.6	0.5	14.1
Pharmaceuticals, medical aids and appliances	227.0	138.0	88.7	48.6	43.3	14.2	559.8
Total	**1,464.2**	**923.8**	**527.7**	**322.1**	**277.1**	**83.9**	**3,598.8**

COMMONWEALTH AUTHORITIES: PERSONAL BENEFIT PAYMENTS—HEALTH—*continued*
($ million)

	N.S.W.(a)	*Vic.*	*Qld*	*S.A.(a)*	*W.A.*	*Tas.*	*Total*
			1985–86				
Hospital and other institutional services and benefits	273.3	216.5	91.0	66.7	60.6	13.7	721.8
Nursing homes	265.0	210.5	89.0	65.4	60.0	13.5	703.4
Hospital benefits	8.3	6.0	2.0	1.3	0.6	0.2	18.4
Clinic and other non-institutional services and benefits	1,133.1	650.4	411.8	238.5	203.6	61.8	2,699.2
Clinic and other non-institutional services n.e.c.	10.9	6.8	4.7	1.7	2.8	1.2	28.1
Medical benefits	1,122.2	643.6	407.1	236.8	200.8	60.6	2,671.1
Public health	3.4	0.7	5.1	3.4	4.0	0.7	17.3
Pharmaceuticals, medical aids and appliances	247.8	153.5	96.7	53.6	47.2	17.0	615.8
Total	**1,657.6**	**1,021.1**	**604.6**	**362.2**	**315.4**	**93.2**	**4,054.1**

(*a*) State totals for New South Wales and South Australia include expenditure on personal benefit payments to residents in the Australian Capital Territory and the Northern Territory respectively.

Commonwealth Government subsidies and grants to States

General revenue grants

The Commonwealth provides untied identifiable health grants within general financial assistance grants to the States and the Northern Territory as a contribution towards the cost of health programs. These arrangements, which are authorised by the *States Grants (General Revenue) Act, 1985*, are designed to replace previous specific purpose health payments for public hospital operating costs (under expired Hospital Cost Sharing Agreements), community health and school dental service programs and apply fully to all States.

Medicare grants to the States

Under the Medicare program, all States, the Northern Territory and the Australian Capital Territory, have been compensated by Medicare grants outside the identified health grants and financial assistance arrangements for:

- revenue losses and additional medical costs directly attributable to the provision of free public hospital accommodation and treatment; and
- a reduction to $50 per day in the fee charged for those persons who seek 'doctor of choice' or private ward accommodation in public hospitals.

The Medicare grants also include an additional community health component to restore the level of Community Health Grants to 1975–76 levels in real terms and capital assistance for specified diagnostic and other high technology equipment.

Paramedical services

Commonwealth funding to participating States under the *States Grants (Paramedical Services) Act 1969* is to be incorporated in the Home and Community Care Program: see Chapter 8, Social Security and Welfare.

Commonwealth Government subsidies and grants to organisations

Health program grants

Health program grants are authorised under Part IV of the Health Insurance Act. The scheme involves payments to approved organisations in respect of the costs incurred by those organisations in providing approved health services or an approved health service development project. The grants were first introduced in 1975 with the intention of establishing a scheme for funding a wide range of health services on other than a fee-for-service basis. The scheme underwent several modifications in later years to allow for the provision of charges to be imposed, where appropriate, for services rendered to privately insured patients.

Since 1 February 1984, there has been a return to the original concept of health program grants in that they now cover the net costs incurred by the organisations in respect of the approved health services, and no charges are raised for those services.

Funds appropriated for these grants amounted to $7.162m in 1984–85, $8.086m in 1985–86 and $11.951m in 1986–87.

National Community Health Program

Under the National Community Health Program, the Commonwealth provides funding to organisations in respect of specific activity which has been approved for the purpose of the Program.

The largest of these projects is the Family Medicine Program (FMP) of the Royal Australian College of General Practitioners, which provides vocational training for young doctors who intend to enter general practice. The trainees receive their training through attachments to participating private general practitioner practices and by attendance at educational events organised by the FMP.

The other national projects are either national co-ordinating secretariats of voluntary non-profit organisations operating in more than one State or specific health-related projects which have national application.

Funds appropriated for this program amounted to $11.0m in 1984–85, $11.835m in 1985–86 and $12.5m in 1986–87.

Medicare grants for community health

The Commonwealth Government has a renewed interest in community health services. The Medicare agreements, which commenced on 1 February 1984, were used as vehicles for delivering additional Commonwealth funds to the States and Territories in block grants for new or expanded services within their borders. These grants amounted to $17.968m in 1984–85, $19.263m in 1985–86 and $20.071m in 1986–87.

National Health Promotion Program

Under the National Health Promotion Program (NHPP), the Commonwealth provides funding for projects that focus on promotion of health or illness prevention. The Better Health Commission (BHC) Report 'Looking Forward to Better Health', which was released in October 1986, made recommendations for National Strategies for better health and identified important areas of priority.

Projects funded under the NHPP must be national in application and focus, and be constant with the BHC priority areas. These include cancer, nutrition, injury, cardio-vascular disease, mental health and communicable diseases.

The allocation of funds for this program was $2.5m in 1986–87. Projects funded included the 'Healthy Cities' Project which is being co-ordinated by the Australian Community Health Association, the 'Health Education and Lifestyle Program', being developed by the Australian Council for Physical Education and Recreation and a program designed to increase the awareness levels of railway workers, regarding their cholesterol levels and eating patterns, which is being conducted by the Department of Public Health, University of Sydney.

Bicentennial Public Health Program

Under the Bicentennial Public Health Program, the Government is providing $26m over three years to strengthen public health and tropical health teaching and research in Australia.

The program has three components:

- grants to eight universities and one research institute (these grants have been extended to cover seven years and now total approximately $41.5m);
- the expansion of the Australian Institute of Health;
- the creation of the National Health and Medical Research Council (NH&MRC) Public Health Research and Development Committee which allocates funds for research and awards fellowships.

Other grants and subsidies

The Commonwealth Government gives financial assistance to certain organisations concerned with public health. Examples of organisations included in this category are outlined below.

The Royal Flying Doctor Service

A non-profit organisation providing medical services in remote areas of Australia. It is distinct from, but co-ordinates with, the Aerial Medical Service which, while formerly operated by the Commonwealth Department of Community Services and Health, has been operated by the Northern Territory Government since 1 January 1979. The Royal Flying Doctor Service is financed mostly from donations and government contributions. For the year ended 30 June 1987 the Commonwealth Government paid grants totalling $6.5m towards operational costs and assistance of $3.0m towards an approved program of capital expenditure.

The Red Cross Blood Transfusion Service

This service is conducted by the Australian Red Cross Society throughout Australia. The operating costs of the Service in the States and the Northern Territory are met by the State governments and the Northern Territory government paying 60 per cent, the Society 5 per cent of net operating cost or 10 per cent of donations, whichever is the lesser, and the Commonwealth Government meeting the balance. Approved capital expenditure by the Service is shared on a dollar for dollar basis with the States and the Northern Territory government. Commonwealth Government expenditure for each State and the Northern Territory during 1986–87 was $16.498m, made up as follows: New South Wales, $4.183m; Victoria, $5.265m; Queensland, $2.230m; South Australia, $1.818m; Western Australia, $2.064m; Tasmania, $0.438m; and Northern Territory, $0.219m. In the Australian Capital Territory, the Red Cross Society meets 5 per cent of the operating costs or 10 per cent of donations and the Commonwealth meets the balance. Commonwealth Government expenditure in 1986–87 was $0.282m.

The National Heart Foundation of Australia

A voluntary organisation, supported almost entirely by public donations, established with the objective of reducing the toll of heart disease in Australia. It approaches this objective by programs sponsoring research in cardiovascular disease, community and professional education directed to prevention, treatment and rehabilitation of heart disease and community service programs including rehabilitation of heart patients, risk assessment clinics and surveys and documentation of various aspects of heart disease and treatment of heart disease in Australia. The Foundation's income in 1986 was $11.493m of which $9.535m was from public donations and bequests. Commonwealth, State and semi-government authorities made grants of $0.099m for specific projects conducted by the Foundation. Since the inception of the Foundation, research has been a major function and a total of $2.621m has been expended in grants to university departments, hospitals and research institutes and for fellowships tenable in Australia and overseas. It is notable however that with increasing opportunities for prevention and control of heart disease, the Foundation's education and community service activities are increasing significantly. In 1986 the expenditure on research, education and community service totalled $6.120m.

The World Health Organization—WHO

The WHO is a specialised agency of the United Nations having as the objective the attainment by all peoples of the highest level of health. Australia is assigned to the Western Pacific Region, the headquarters of which is at Manila, and is represented annually at both the World Health Assembly in Geneva and the Regional Committee Meeting in Manila. Australia's contribution to WHO for 1986 was $6.130m.

The International Agency for Research on Cancer—IARC

The IARC was established in 1965 within the framework of the World Health Organization. The headquarters of the Agency are located in Lyon, France. The objectives and functions of the Agency are to provide for planning, promoting and developing research in all phases of the causation, treatment and prevention of cancer. Australia's contribution to the IARC for 1986 was $0.602m.

National health services and advisory organisations

Australian Health Ministers' Conference and the Australian Health Ministers' Advisory Council

The Australian Health Ministers' Conference (AHMC) and its advisory body, the Australian Health Ministers' Advisory Council (AHMAC) provide a mechanism for Commonwealth, State and Territory Governments to discuss matters of mutual interest concerning health policy, services and programs. Neither the Conference nor the Council has statutory powers, and decisions are reached on the basis of consensus. Their constitution rests on the formal agreement by the Commonwealth, State and Territory Governments of the membership and functions.

The AHMC comprises the Commonwealth, State and Territory Health Ministers, and the Commonwealth Minister responsible for Health in the A.C.T. Other Commonwealth Ministers may be invited to speak on items relevant to their portfolio. The New Zealand Health Minister may attend meetings as an observer.

AHMAC comprises the head and one other senior officer from the Commonwealth, State and Territory health authorities and the Department of Veterans' Affairs. AHMAC was established by the April 1986 AHMC to replace the Standing Committee of Health Ministers (SCOHM) and the Australian Health Services Council (AHSC).

AHMAC may establish standing committees to serve ongoing matters of concern to the Council and the Australian Health Ministers' Conference and ad hoc working parties or subcommittees to investigate and report on specific issues or aspects. The standing committees include the AIDS Task Force, the Commonwealth/State Advisory Committee on Nursing Issues, the Health Targets and Implementation Committee, the Subcommittee on Breast and Cervical Cancers and the Task Force on National Hospital Statistics.

Health services organisations

The Commonwealth Department of Health Pathology Laboratory Service

This service provides clinical diagnostic and investigational facilities at laboratories situated in Albury, Bendigo, Cairns, Lismore, Rockhampton, Tamworth, Toowoomba and Townsville. Their primary role is to assist medical practitioners in the diagnosis of illness and disease and to provide facilities for investigations into public health and aspects of preventive medicine. During 1986–87, these laboratories carried out approximately 7.5 million examinations, tests and investigations in respect of 0.7 million patient requests.

The Commonwealth Serum Laboratories Commission—CSL

CSL produces pharmaceutical products for human and veterinary use and is one of Australia's foremost scientific institutes. The Commission's main function is to produce and sell prescribed pharmaceutical products used for therapeutic purposes and to ensure the supply of essential pharmaceutical products in accordance with national health needs. The Commission's functions also include research and development relating to many kinds of human and veterinary diseases covering the fields of bacteriology, biochemistry, immunology and virology. The Commission's laboratories and central administration are located at Parkville, Victoria, with storage and distribution facilities in all States.

For over sixty years, CSL has been Australia's chief supplier of biological medicines, insulins, vaccines, human blood fractions, Bacillus Calmette-Guerin (BCG) and an increasing range of veterinary pharmaceutical products needed by Australia's sheep, cattle, pig and poultry industries. The CSL Act now allows CSL to produce, buy, import, supply, sell or export prescribed pharmaceutical products (either of a biological or non-biological nature).

The Australian Radiation Laboratory

The Laboratory is concerned with the development of national policy relating to radiation health and:

- undertakes research and development in the fields of ionising and non-ionising radiations which have implications for public and occupational health;
- formulates policy by developing codes of practice and by undertaking other regulatory, compliance, surveillance and advisory responsibilities at the national level with respect to public and occupational health aspects of radiation;

- maintains national standards of radiation exposure and radioactivity;
- undertakes research and provides advice in relation to the quality and use of radiopharmaceutical substances.

The National Acoustic Laboratories

The Laboratories undertake scientific investigations into hearing and problems associated with noise as it affects individuals, and advise Commonwealth Government departments and instrumentalities on hearing conservation and the reduction of noise. A free audiological service is provided for pensioners with medical benefit entitlements and their dependants, persons under 21, war widows, Social Security rehabilitees and Veterans' Affairs patients. During 1986–87 the number of appointments provided was 195,536 and the number of hearing aids fitted was 69,908.

The National Biological Standards Laboratory—NBSL

The NBSL comprises the Pharmaceuticals, Biologicals and Medical Devices Dental Products Branches of the Commonwealth Department of Community Services and Health. NBSL is responsible for the development of standards for therapeutic goods and for testing such products for compliance with standards to ensure that they are safe, pure, potent and efficacious. Other responsibilities include the investigation of complaints, development of analytical methods, the training of analysts and provision of advice regarding the adequacy of data submitted by manufacturers in support of marketing and clinical trial applications for specific products.

The British Pharmacopoeia is the primary source of standards applicable to goods under the Therapeutic Goods Act. In addition, the Act provides that the Minister may make Orders specifying standards for general classes of goods and specific goods which are imported, the subject of interstate trade or supplied to the Commonwealth Government. Such Orders are developed on the advice of a statutory committee, the Therapeutical Goods Committee, with implementation of the standards being undertaken by NBSL. Individual sections of NBSL are organised along disciplinary lines which include virology, microbiology, pharmacology, analytical chemistry, materials testing, biomedical engineering and biocompatibility testing. NBSL staff work in close liaison with the Good Manufacturing Practice (GMP) inspectors who are responsible for the preparation, revision and administration of the Code of Good Manufacturing Practice applicable to the manufacturers of therapeutic goods.

The Ultrasonic Institute

The Institute conducts research and provides advisory services on the use of ultrasonic radiation in the diagnosis and treatment of disease. The Institute is recognised as a world leader in its field.

Commonwealth Government health advisory organisations

The National Health and Medical Research Council—NH & MRC

The NH & MRC advises the Commonwealth Government and State governments on matters of public health administration and the development of standards for food, pesticides, agricultural chemicals, water and air for consideration by the States for inclusion in their legislation. It also advises the Commonwealth Government and State governments on matters concerning the health of the public and on the merits of reputed cures or methods of treatment which are from time to time brought forward for recognition. The Council advises the Commonwealth Minister for Community Services and Health on medical research and on the application of funds from the Medical Research Endowment Fund which provides assistance to Commonwealth Government departments, State departments, universities, institutions and persons for the purposes of medical research and for the training of persons in medical research. The Commonwealth Government makes annual appropriations to the fund. Expenditure for 1986–87 was $58.952 million. The secretariat for the Council and its Committees is provided by the Commonwealth Department of Community Services and Health and is located in Canberra.

The Australian Institute of Health—AIH

AIH was established by Federal Cabinet in August 1984 and was made an independent statutory body in July 1987. It is the health research and statistics arm of the Commonwealth Community Services and Health portfolio, and also provides research and statistical support to the States and Territories through the Australian Health Ministers' Advisory Council (AHMAC). The Institute aims to contribute to improvements in the nation's health by:

- collecting and providing assistance in the production of health related statistics;
- conducting and promoting research into the health of the people of Australia;
- undertaking studies into the provision and effectiveness of health services and health technology;
- providing advice to the Minister on strategies for improving the health of the Australian people.

It is required to report to the Minister and Parliament every two years accordingly.

The AIH has given priority to the improvement of the national health data base. This includes developing a National Death Index, a National Cancer Statistics Clearing House, a National Nosology Reference Centre and national Aboriginal health statistics. It has undertaken a major study of differences in health in different sub-groups of the population, and, in co-operation with the States and Territories, has established a National Injury Surveillance and Prevention system. Research studies are being undertaken into the provision and use of health services. These include investigations into hospital usage and costs, storage and wastage of medicines in households, medical workforce supply and demand, discretionary surgery usage and quality assurance. The Institute publishes information on national health expenditure, analyses of the major health workforce groups, and statistics on hospital and other health care facilities.

The Institute incorporates the Secretariat of the National Health Technology Advisory Panel (NHTAP) which is undertaking a major evaluation of magnetic resonance imaging, and is involved in the work of the mammography screening sub-committee of AHMAC. The Institute also supports the National Perinatal Statistics Unit at the University of Sydney and the Dental Statistics and Research Unit at the University of Adelaide.

The National Occupational Health and Safety Commission—NOHSC

The NOHSC is a statutory authority established by the Commonwealth Government to develop, facilitate and implement a national occupational health and safety strategy, covering issues such as standards, research, training, the collection and dissemination of information, and the development of common approaches to occupational health and safety legislation.

The Commission, which adopted the working title of *Worksafe Australia* from April 1986, is a tripartite body comprising representatives of Commonwealth, State and Territory governments, and peak employee and employer bodies. Persons and groups with specialist knowledge or requirements in the field of occupational health and safety assist in the work of the Commission through their participation in the various committees and working parties established by NOHSC.

The Australian Drug Evaluation Committee

The Committee makes medical and scientific evaluations both of such goods for therapeutic use as the Minister for Community Services and Health refers to it for evaluation and of other goods for therapeutic use which, in the opinion of the Committee, should be so evaluated. It advises the Minister for Community Services and Health as it considers necessary on matters relating to the importation into, and the distribution within, Australia of goods for therapeutic use that have been the subject of evaluation by the Committee. It has the powers to co-opt and seek advice from specialist medical colleges and associations and from the medical and allied professions, drug manufacturers and other sources.

The Committee met on eight occasions throughout 1986–87. Ninety-four applications for approval for general marketing of new drugs were considered, resulting in forty-six recommendations for approval, thirty-eight for rejection and ten for deferral. There were a further twenty-five approvals for extensions of therapeutic indications or amended dosage regimens for drugs already on the market.

The Therapeutic Goods Committee

The Committee provides advice to the Minister regarding the standards applicable to goods for therapeutic use including the requirement for packaging and labelling of such goods. Members of the committee are selected for their individual expertise in pharmaceutics, pharmaceutical chemistry, pharmacology, microbiology, virology, veterinary science, medical devices and the manufacture of pharmaceuticals and therapeutic devices. The Committee replaces the Therapeutic Goods Standards Committee and the Therapeutic Goods Advisory Committee both of which have been abolished.

National Campaign Against Drug Abuse—NCADA

Australia's NCADA, which was launched in April 1985, is a comprehensive, integrated and ongoing campaign, combining the resources of all Australian governments and the community in addressing the problems of drug abuse. A Ministerial Council on Drug Strategy has been formed by the Commonwealth, State and Territory governments to establish, fund, maintain and evaluate the Campaign.

The Commonwealth contributes $20 million each year, of which $12 million is allocated to the States and Territories who match it on a dollar for dollar basis, and $8 million to national programs and to locally based pilot and demonstration initiatives in the areas of prevention, treatment, early intervention, data management and research. During 1986–87, over 350 separate projects were funded under the Commonwealth/State cost-sharing arrangements. These projects, which are mainly managed at the local or State and Territory level, cover such areas as education, training, residential and non-residential treatment, community development and consultancy, research, evaluation and monitoring.

The range of projects involved reflects the diversity of the drug abuse problem in Australia, and the recognition by NCADA of the special needs of groups within the community such as youth, prisoners, Aboriginal people and women.

Information, research and evaluation are central parts of the NCADA and activities have included:

- a national media/information campaign, 'The Drug Offensive';
- research under the Research into Drug Abuse Program. By 30 June 1987, over 50 grants totalling $2 million had been provided;
- the establishment of two national Centres of Excellence in drug research. The Commonwealth allocates $1 million per annum for the development of these centres. The Sydney-based centre is concentrating its work in the areas of drug treatment and rehabilitation. The Perth-based centre is concentrating on research into the prevention of drug abuse;
- the establishment of a National Drug Abuse Data System based on a network of State and Territory data collection agencies;
- continuing evaluation of the Campaign from the community-based and national perspectives.

Another aspect of the NCADA strategy is aimed at reducing the supply of drugs. A considerable effort has been made in recent years to strengthen the capabilities of Australian federal law enforcement agencies (i.e. the Australian Federal Police (AFP), National Crime Authority (NCA) and the relevant areas of the Australian Customs Service (ACS)). High priority is placed on the investigation of drug trafficking and organised crime. Additional funds have been invested in improved equipment (e.g. computers) and trained manpower.

In addition, the Commonwealth Government has recently enacted a package of legislation which provides a range of new powers to law enforcement agencies which will assist in the investigation and recovery of the proceeds of organised crime, including drug trafficking.

The international aspects of drug trafficking are also being addressed. The experience to date with tracing assets has highlighted the problems that arise where assets are transferred overseas or change hands before a suspect is convicted, thus making it very difficult for law enforcement agencies to recover the profits of criminal activity. Amongst the new measures introduced is an Act which allows the negotiation of Treaties of Mutual Assistance with other countries. These treaties will enhance the ability of law enforcement agencies to conduct investigations overseas and will, in most cases, allow for the recovery of confiscated assets.

Communicable diseases

Quarantine

The *Quarantine Act 1908* is administered jointly by the Commonwealth Departments of Community Services and Health and Primary Industries and Energy and provides for the taking of measures to prevent the introduction or spread of diseases affecting humans, animals and plants. A special article on the history of human quarantine, contributed by the Department of Community Services and Health, is included on page 404.

Human quarantine

The masters of all ships and aircraft arriving in Australia from overseas are required to notify medical officers acting on behalf of the Commonwealth Department of Community Services and Health of all cases of illness on board at the time of arrival. Passengers or crew members who are believed to be suffering from a quarantine illness may be examined by Quarantine Medical Officers located at all ports of entry.

The main concern of examining officers is the detection of quarantinable diseases including cholera, yellow fever, plague, typhus fever and viral haemorrhagic fevers. These diseases are not endemic to Australia and it is of great importance to prevent their entry. Sufferers or suspected sufferers may be isolated to prevent the possible spread of the disease.

A valid International Certificate of Vaccination is required of travellers to Australia over one year of age who have been in *yellow fever* infected areas within the past 6 days.

All passengers, whether they arrive by sea or air, are required to give their intended place of residence in Australia so that they may be traced if a case of disease occurs among the passengers on the ship or aircraft by which they travelled to Australia.

Isolation. Under the Quarantine Act, airline and shipping operators are responsible for the expenses of isolation of all travellers who disembark from their aircraft or ship and who fail to meet Australia's vaccination requirements.

Animal quarantine

The Department of Primary Industries and Energy, in consultation with the States and Australia's agricultural and livestock groups, seeks to satisfy the need for animal derived goods and to provide improved genetic material for Australia's livestock industries, while ensuring the maximum practical protection against the entry of exotic livestock diseases.

Importation of animals is restricted to certain species from designated overseas countries whose diseases status and pre-entry quarantine facilities meet Australia's stringent requirements. With few exceptions all imported animals are required to serve a period in quarantine on arrival.

Animal quarantine stations are located at most capital cities. A high security animal quarantine station on the Cocos (Keeling) Islands provides the means whereby the safe importation of a wide range of commercial livestock is facilitated.

Measures to prevent the entry of exotic diseases are also applied through the Northern Surveillance program and the rigorous screening of applications to import biological materials and animal products and through inspection and treatment procedures on arrival.

Plant quarantine

Australia is free of numerous plant pests and diseases that occur elsewhere in the world. The importation into Australia of plant material is therefore subject to strict quarantine control.

The Department of Primary Industries and Energy has responsibility, in consultation with the States and agricultural and plant groups, for administering these controls. Some materials are admitted only under certain conditions while others are prohibited altogether. However, the facilitation of safe importation is considered to be the best available means of reducing pest and disease risk involved in illegal importation.

The general objective is to keep out of the country any pest or disease which could cause serious economic losses to Australia's agriculture, horticulture or forests. Measures to prevent the entry of unwanted exotic plant pests and diseases involve careful screening of applications to import plant material and inspection and treatment procedures on arrival.

Notifiable diseases

Although State and Territory health authorities are responsible for the prevention and control of infectious diseases within their areas of jurisdiction, certain powers and responsibility may be delegated to local authorities within each State. These usually involve such activities as personal health services, environmental sanitation and local communicable disease control.

The Commonwealth Department of Community Services and Health receives notification figures from the States and Territories on a monthly basis which are published in *Communicable Diseases Intelligence*. The national totals for the year are published in the annual report of the Department.

The following table shows, by State and Territory, the number of cases notified in 1986, for those diseases which are notifiable in all States and Territories. The table does not include diseases which are notifiable only in certain States or Territories. Factors such as the availability of medical and diagnostic services, varying degrees of attention to disease notification, and the enforcement and follow-up of notifications by health authorities, affect both the completeness and the comparability of the figures between States and from year to year.

NOTIFIABLE DISEASES(*a*), NUMBER OF CASES NOTIFIED 1986

Disease	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Acquired immune deficiency syndrome (AIDS)	153	36	9	4	11	—	—	2	215
Amoebiasis	9	10	10	14	7	—	1	3	54
Ankylostomiasis	—	—	6	26	6	—	2	—	40
Arbovirus infection	231	158	995	1	28	—	1	—	1,414
Brucellosis	1	1	10	—	—	—	—	—	12
Diphtheria	—	—	—	—	—	—	44	—	44
Gonorrhoea	1,399	1,085	1,158	680	1,572	40	579	72	6,585
Hepatitis A (infectious)	280	124	188	510	504	7	64	8	1,685
Hepatitis B (serum)	529	243	443	122	328	8	38	55	1,766
Hydatid disease	2	1	1	4	2	1	—	2	13
Leprosy	13	4	2	—	5	—	3	—	27
Leptospirosis	23	27	98	5	4	22	—	—	179
Malaria	179	93	283	33	43	10	20	35	696
Ornithosis	2	7	2	25	4	1	—	2	43
Poliomyelitis	—	—	—	—	—	1	—	—	1
Q. Fever	95	2	217	49	3	1	—	—	367
Salmonella infections	831	189	511	361	214	54	311	23	2,494
Shigella infections	154	32	133	71	134	2	307	—	833
Syphilis	1,450	62	564	141	252	1	1,113	11	3,594
Tetanus	—	1	2	1	1	—	—	—	5
Tuberculosis (all forms)	360	255	169	78	118	19	26	16	1,041
Typhoid fever	26	10	3	1	3	—	—	2	45
Typhus (all forms)	—	—	11	—	—	—	—	—	11

(*a*) There were no cases of anthrax, cholera, plague, smallpox or yellow fever.

NOTIFIABLE DISEASES, NUMBER OF CASES NOTIFIED: AUSTRALIA, 1982 TO 1986

Disease	*1982*	*1983*	*1984*	*1985*	*1986*
Acquired immune deficiency syndrome (AIDS)	1	6	41	112	215
Amoebiasis	33	57	46	87	54
Ankylostomiasis	110	88	75	43	40
Anthrax	—	—	—	1	—
Arbovirus infection	221	33	1,577	660	1,414
Brucellosis	28	16	15	22	12
Cholera	1	4	—	2	—
Diphtheria	2	1	—	17	44
Gonorrhoea	12,805	10,646	8,894	7,605	6,585
Hepatitis A (infectious)	1,046	985	674	848	1,685
Hepatitis B (serum)	725	944	1,559	1,645	1,766
Hydatid disease	12	10	9	14	13
Leprosy	46	62	28	38	27
Leptospirosis	135	242	227	185	179
Malaria	548	571	640	421	696
Ornithosis	14	19	42	17	43
Poliomyelitis	—	—	—	—	1
Q. Fever	(*a*)	(*a*)	(*a*)	(*a*)	367
Salmonella infections	1,866	2,989	2,092	2,668	2,494
Shigella infections	437	567	420	734	833
Syphilis	3,211	3,556	3,323	3,523	3,594
Tetanus	12	10	7	11	5
Tuberculosis (all forms)	1,363	1,219	1,299	1,088	1,041
Typhoid fever	15	22	50	31	45
Typhus (all forms)	11	21	8	10	11

(*a*) Not notifiable in all States and Territories until 1986.
Source: Commonwealth Department of Community Services and Health.

Immunisation campaigns

Immunisation is recommended for all Australian children as a protection against childhood diseases such as poliomyelitis, diphtheria, measles, mumps, tetanus and whooping cough. Immunisation programs are implemented in all States and Territories of Australia.

Rubella immunisation is routinely offered to all females between their 10th and 15th birthdays through the School Girl Rubella Immunisation Program. Rubella immunisation is also recommended for all non-immune females of child bearing age.

Measles immunisation is currently promoted through the National Campaign Against Measles. This campaign aims to increase community awareness of the potential seriousness of the disease and to encourage measles vaccination with the ultimate goal of eradicating measles in Australia.

The childhood immunisation schedule, as recommended by the National Health and Medicine Research Council, is available from the Commonwealth Department of Community Services and Health.

Acquired Immune Deficiency Syndrome—AIDS

In recognition of the potentially disastrous effects of AIDS, Australian governments have put in place a range of education, research and prevention strategies directed at all groups in the community.

These strategies are co-ordinated by the Commonwealth Department of Community Services and Health which established a special AIDS Co-ordinating Unit. This Unit provides high level co-ordination of national activities in regard to AIDS. It has responsibility for co-ordinating and evaluating all State and community AIDS projects, assessing the funding necessary for these initiatives, and undertaking liaison with a wide range of Australian and overseas agencies. In addition, the Unit closely monitors medical and scientific developments in relation to the disease. It also provides executive support for the various national AIDS Committees and other bodies which have been established to facilitate the discussion and dissemination of information about AIDS.

These committees include:

- the AIDS Task Force, established in 1984 to advise Health Ministers on medical and scientific aspects of AIDS;
- the National Advisory Committee on AIDS, established to advise the Commonwealth Minister for Community Services and Health on preventive education, social and legal implications of the disease;
- a Parliamentary Liaison Group on AIDS, established to bring together federal parliamentarians to enable them to keep abreast of AIDS issues and to provide a further input into community attitudes on the disease;
- an Interdepartmental Committee on AIDS, established to facilitate discussion on AIDS policy and implications outside the Health portfolio; and
- an Intergovernmental Committee on AIDS, established to bring together the States and the Commonwealth to discuss AIDS policy and financial matters.

Since 1984, about $50 million has been spent by all Australian governments on the provision of preventive measures and research. Initially, Australian governments funded information directed at groups thought to be at greatest risk—male homosexuals and bisexuals, haemophiliacs and recipients of blood products, intravenous drug users and their sexual partners, and male and female prostitutes. Increased funding also underwrote medical treatment and scientific research, particularly epidemiological research. Because of the co-operative links established between doctors, researchers and the homosexual communities in Sydney and Melbourne, it has been possible to observe and accurately report the spread of the disease in these two cities.

Since 1984, the Commonwealth Government has made available $24 million for initiatives to combat the spread of AIDS. These initiatives include a national education campaign, medical research, support for blood screening, the development and production of blood screening kits by the Commonwealth Serum Laboratories, and contributions to programs operated by the States and Territories.

In November 1984, it was agreed that AIDS programs would initially be funded on a 100 per cent basis by the Commonwealth but that, in the longer term, the States and the Northern Territory should accept their share of responsibility and funding. In May 1985, the Australian Health Ministers' Conference reached agreement for cost-sharing on a dollar for dollar basis of State/Territory programs, including funding of community groups. There is, however, direct funding by the Commonwealth for AIDS research, a National AIDS Education Campaign and some national non-government organisations.

Summary statistics of cases of AIDS reported in Australia to 30 July 1987 are shown below.

REPORTED AIDS CASES TO 30 JULY 1987

	N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Number of cases—									
Males	369	90	39	26	8	1	2	4	539
Females	15	1	3	2	1	1	—	—	23
Persons	384	91	42	28	9	2	2	4	562
Known deaths—									
Number	220	39	30	12	3	1	1	2	308
Per cent of cases	57	43	71	43	33	50	50	50	55

Source: Commonwealth Department of Community Services and Health

REPORTED AIDS CASES TO 30 JULY 1987 BY TRANSMISSION CATEGORY

	Cases	
Transmission category	*Number*	*Per cent*
Homo/Bi-sexual men	486	86
Intra-venous drug user	3	—
Homo/Bi-sexual drug user	17	3
Blood transfusion recipient	38	7
Persons with haemophilia	6	1
Heterosexual transmission	9	2
Others	3	1
Total	**562**	**100**

Source: Commonwealth Department of Community Services and Health

Hospitals

Repatriation hospitals

The Department of Veterans' Affairs administers the only national hospital system in Australia, consisting of six acute-care Repatriation hospitals (one in each State), three auxiliary hospitals, and the Anzac Hostel in Brighton, Victoria.

A broad range of in-patient and out-patient services is available for the care and treatment of eligible veterans and their dependants. Patients from the general community may also receive treatment at Repatriation hospitals provided bed capacity is available after the needs of entitled veterans have been met and the hospital facilities are appropriate to the treatment required.

The Department of Veterans' Affairs has fostered the development of rationalised treatment arrangements with State health authorities to avoid the unnecessary duplication of hospital facilities and services. Repatriation General Hospitals (RGHs) are affiliated with a university and learned colleges for the education of medical and allied health professional staff.

Veterans may also receive treatment in non-departmental public and private hospitals and nursing homes at the Department's expense in certain circumstances. Entitled patients with psychiatric conditions requiring custodial care are, by agreement with the State governments, accommodated at the expense of the Department in mental hospitals administered by State authorities.

Details of patients, staff and expenditure on Repatriation institutions and other medical services are given in Chapter 8, Social Security and Welfare.

Mental health institutions

The presentation of meaningful statistics of mental health services has become increasingly difficult because of changes in recent years in the institutions and services for the care of mental patients. The emphasis has shifted from institutions for care of patients certified insane to a range of mental health services provided for in-patients and out-patients at psychiatric hospitals, admission and reception centres, day hospitals, out-patient clinics, training centres, homes for the mentally retarded and geriatric patients, psychiatric units in general hospitals, and the like. Statistics relating to mental health institutions are available from relevant agencies in most States.

Hospital statistics

A major factor in the cost of health care in Australia is hospital treatment of patients. Attempts to measure the number of in-patients treated and bed-days involved for each disease or injury have been going on for some years, but as coverage is incomplete it is not possible to present national statistics. Figures for New South Wales, Victoria and Queensland however, are published in the ABS publications *Hospital and Nursing Home Inpatients* (4306.1), *Public Hospital Morbidity* (4301.2) and *Hospital Morbidity* (4303.3) respectively. Statistics for South Australia, Western Australia and the Northern and Australian Capital Territories are available from the relevant State and Territory health authority.

The number of hospitals and beds in each State and Territory is provided in the table below.

HOSPITALS AND BEDS, STATES AND TERRITORIES, 30 JUNE 1987

	N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Number of hospitals—									
Public/Recognised	220	155	142	82	91	21	5	4	720
Private	100	119	48	36	22	6	—	2	333
Total hospitals	**320**	**274**	**190**	**118**	**113**	**27**	**5**	**6**	**1,053**
Beds in—									
Public/Recognised	23,230	14,846	12,571	5,891	6,012	2,004	660	945	66,159
Private	6,322	6,132	4,157	2,173	1,916	516	—	211	21,427
Total hospital beds	**29,552**	**20,978**	**16,728**	**8,064**	**7,928**	**2,520**	**660**	**1,156**	**87,586**
Beds per 1,000 population	*5.3*	*5.0*	*6.4*	*5.8*	*5.4*	*5.6*	*4.4*	*4.3*	*5.4*

Source: Commonwealth Department of Community Services and Health.

Deaths

Information relating to crude death rates and life expectancy is contained in Chapter 6, Demography (Vital Statistics).

Causes of death and perinatal deaths

Causes of death in Australia are classified according to the Ninth Revision of the International Classification of Diseases (ICD) produced by the World Health Organization (WHO). The statistics in the table below show the number of deaths registered during 1985, classified to broad groupings of causes of death. More detailed statistics are contained in *Causes of Death, Australia* (3303.0).

The major causes of death in the community in 1985 were diseases of the circulatory system (accounting for 48.4 per cent), neoplasms (23.5 per cent), diseases of the respiratory system (7.7 per cent) and accidents, poisonings and violence (6.6 per cent). Infectious diseases have caused few deaths in Australia in recent years, largely as a result of quarantine activities, immunisation campaigns and similar measures. In 1985, only 0.5 per cent of all deaths were due to such diseases.

The relative importance of groups of causes of death varies with age. Diseases of the circulatory system and neoplasms are predominant in middle and old age. Accidents, particularly those involving motor vehicles, are the primary cause of death in childhood and early adulthood. The majority of infant deaths (57.7 per cent in 1985) occur within 28 days after birth (see table on perinatal deaths, page 402). Nearly all of these neonatal deaths are due to congenital anomalies, birth injury or other conditions present from birth.

CAUSES OF DEATH IN EACH AGE GROUP, AUSTRALIA, 1985

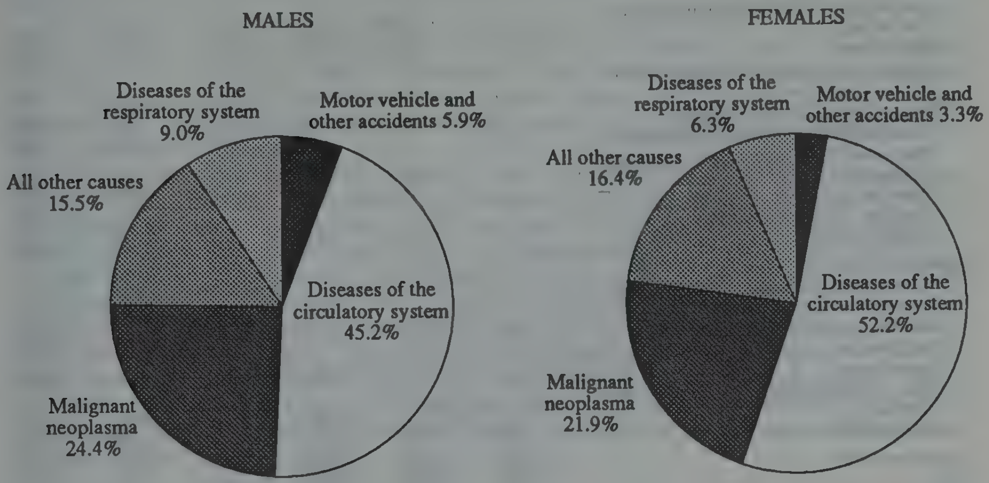
Causes of death	*Age group (years)* Under one	1–14	15–24	25–34	35–44	45–54	55–64	65–74	75 and over	Total (a)
					NUMBER					
Infectious and parasitic diseases	25	29	20	21	17	30	80	135	266	623
Neoplasms	25	165	190	356	914	2,496	6,226	8,441	9,133	27,948
Endocrine, nutritional and metabolic diseases and immunity disorders	18	34	35	40	63	99	368	633	1,222	2,513
Diseases of the nervous system and sense organs	38	81	67	66	73	87	219	403	827	1,861
Diseases of the circulatory system	25	40	85	229	729	2,163	6,709	14,087	33,446	57,528
Diseases of the respiratory system	62	50	61	79	115	292	1,100	2,444	4,960	9,164
Diseases of the digestive system	11	11	13	60	156	338	670	874	1,863	3,998
Congenital anomalies	691	110	39	35	14	24	23	26	20	982
All other diseases(*b*)	982	27	111	181	91	135	345	815	2,864	5,552
Signs, symptoms and ill-defined conditions	524	35	14	12	18	17	23	24	152	820
Accidents, poisonings and violence	51	500	1,818	1,334	913	709	794	660	1,035	7,819
All causes	**2,452**	**1,082**	**2,453**	**2,413**	**3,103**	**6,390**	**16,557**	**28,542**	**55,788**	**118,808**
					RATE (*c*)					
Infectious and parasitic diseases	10	1	1	1	1	2	5	13	44	4
Neoplasms	10	5	7	14	42	161	428	837	1,517	177
Endocrine, nutritional and metabolic diseases and immunity disorders	7	1	1	2	3	6	25	63	203	16
Diseases of the nervous system and sense organs	15	2	3	3	3	6	15	40	137	12
Diseases of the circulatory system	10	1	3	9	33	140	461	1,396	5,557	365
Diseases of the respiratory system	25	1	2	3	5	19	76	242	824	58
Diseases of the digestive system	4	—	—	2	7	22	46	87	310	25
Congenital anomalies	279	3	1	1	1	2	2	3	3	6
All other diseases (*b*)	397	1	4	7	4	9	23	81	476	35
Signs, symptoms and ill-defined conditions	212	1	1	—	1	1	2	2	25	5
Accidents, poisonings and violence	21	14	68	52	42	46	55	65	172	50
All causes	**991**	**31**	**92**	**94**	**141**	**413**	**1,138**	**2,829**	**9,268**	**754**
					PERCENTAGE (*d*)					
Infectious and parasitic diseases	1.0	2.7	0.8	0.9	0.5	0.5	0.5	0.5	0.5	0.5
Neoplasms	1.0	15.2	7.7	14.8	29.5	39.1	37.6	29.6	16.4	23.5
Endocrine, nutritional and metabolic diseases and immunity disorders	0.7	3.1	1.4	1.7	2.0	1.5	2.2	2.2	2.2	2.1
Diseases of the nervous system and sense organs	1.5	7.5	2.7	2.7	2.4	1.4	1.3	1.4	1.5	1.6
Diseases of the circulatory system	1.0	3.7	3.5	9.5	23.5	33.8	40.5	49.4	60.0	48.4
Diseases of the respiratory system	2.5	4.6	2.5	3.3	3.7	4.6	6.6	8.6	8.9	7.7
Diseases of the digestive system	0.4	1.0	0.5	2.5	5.0	5.3	4.0	3.1	3.3	3.4
Congenital anomalies	28.2	10.2	1.6	1.5	0.5	0.4	0.1	0.1	—	0.8
All other diseases (*b*)	40.0	2.5	4.5	7.5	2.9	2.1	2.1	2.9	5.1	4.7
Signs, symptoms and ill-defined conditions	21.4	3.2	0.6	0.5	0.6	0.3	0.1	0.1	0.3	0.7
Accidents, poisonings and violence	2.1	46.2	74.1	55.3	29.4	11.1	4.8	2.3	1.9	6.6
All causes	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(*a*) Total includes 28 deaths where age is not known. (*b*) Includes 991 deaths from conditions originating in the perinatal period and 1,860 deaths from diseases of the genito-urinary system. (*c*) Rates are per 100,000 of population at risk, except for children under one year of age which are per 100,000 live births registered. (*d*) Percentage of all deaths within each age group.

Note: The number of deaths registered in 1985 includes some 2,000 deaths that occurred in New South Wales that normally would have been registered in 1984. For further information see ABS publication *Deaths, Australia, 1985* (3302.0).

As well as differing by age, the relative significance of certain causes of death also varies by sex, as illustrated below.

ALL DEATHS: PERCENTAGE DISTRIBUTION BY CAUSE, AUSTRALIA, 1985



Suicides

A range of statistics relating to deaths by suicide (as determined by coroners' inquests) in Australia was published by the ABS in *Suicides, Australia, 1961–1981 (Including historical series 1881–1981)* (3309.0). Statistics for later years are available on request.

Perinatal deaths

Since deaths within the first 28 days of life (neonatal deaths) are mainly due to conditions originating before or during birth, and the same conditions can cause fetal death (stillbirth), special tabulations are prepared combining the two. These are termed 'perinatal deaths'. The statistical definition of perinatal deaths in Australia was amended in 1979 from that previously used, in accordance with a recommendation of the Ninth Revision Conference (1975) of the World Health Organization 'that national perinatal statistics should include all fetuses and infants delivered weighing at least 500 grams (or, when birthweight is unavailable, the corresponding gestational age (22 weeks) or body length (25 cm crown-heel)), whether alive or dead'. The table below incorporates a further recommendation of the Conference in that it shows the number of fetal, neonatal and total perinatal deaths in Australia classified by both the main condition in the fetus/infant and the main condition in the mother.

The perinatal death rate for Australia fell slightly in 1985, to 11.79 per 1,000 total births compared with 11.87 in 1984.

Of the conditions in the child, the two main groups responsible for perinatal deaths were *Hypoxia, birth asphyxia and other respiratory conditions* (36.3 per cent of the total) and *Congenital anomalies* (25.4 per cent). Thirty-eight per cent of all perinatal deaths did not mention any condition in the mother as contributing to the death. Of those deaths where maternal conditions were reported, 42.8 per cent were reported as being due to *Complications of placenta, cord and membranes.*

PERINATAL DEATHS BY CAUSE, AUSTRALIA, 1985

Cause of death	*Number of deaths* Fetal	Neonatal	Perinatal	*Rate* Fetal(a)	Neonatal (b)	Perinatal (a)
Conditions in fetus/infant—						
Slow fetal growth, fetal malnutrition and immaturity	114	116	230	0.46	0.47	0.92
Birth trauma	7	42	49	0.03	0.17	0.20
Hypoxia, birth asphyxia and other respiratory conditions	634	431	1,065	2.55	1.74	4.28
Fetal and neonatal haemorrhage	26	95	121	0.10	0.38	0.49
Haemolytic disease of fetus and newborn	18	9	27	0.07	0.04	0.11
Other conditions originating in the perinatal period	488	109	597	1.96	0.48	2.40
Congenital anomalies	217	529	746	0.87	2.14	3.00
Infectious and parasitic diseases	6	4	10	0.02	0.02	0.04
All other causes	8	81	89	0.03	0.33	0.36
Conditions in mother—						
Maternal conditions which may be unrelated to present pregnancy	213	123	336	0.86	0.50	1.35
Maternal complications of pregnancy	159	414	573	0.64	1.67	2.30
Complications of placenta, cord and membranes	616	168	784	2.48	0.68	3.15
Other complications of labour and delivery	25	115	140	0.10	0.47	0.56
No maternal condition reported	505	596	1,101	2.03	2.41	4.43
All causes—1985	**1,518**	**1,416**	**2,934**	**6.10**	**5.73**	**11.79**
1984	1,593	1,204	2,797	6.76	5.15	11.87
1983	1,619	1,349	2,968	6.63	5.56	12.20
1982	1,705	1,529	3,234	7.06	6.38	13.39
1981	1,706	1,440	3,146	7.18	6.11	13.25
1980	1,708	1,503	3,211	7.52	6.67	14.14

(*a*) Per, 1,000 births registered (live births and stillbirths) weighing 500 grams or more at birth. (*b*) Per, 1,000 live births registered weighing 500 grams or more at birth.

Cremations

CREMATIONS, AUSTRALIA

State/Territory	*1983* Number of cremations (a)	Number of deaths	*1984* Number of cremations (a)	Numbers of deaths	*1985* Number of crematoria (b)	Number of cremations (a)	Number of deaths
N.S.W.	21,443	40,323	23,322	39,114	18	23,045	44,044
Vic.	11,865	29,320	11,954	29,493	5	12,747	31,257
Qld	8,073	17,200	8,523	17,522	9	8,849	18,760
S.A.	4,514	9,882	4,565	10,128	2	4,879	10,543
W.A.	4,496	8,359	4,831	8,514	3	4,876	8,863
Tas.	1,489	3,311	1,548	3,549	2	1,634	3,659
N.T.	—	738	—	550	—	—	651
A.C.T.	661	951	716	1,044	1	722	1,031
Australia	**52,541**	**110,084**	**55,459**	**109,914**	**40**	**56,752**	**118,808**

(*a*) Cremations are not necessarily carried out in the State or Territory where the death was registered. (*b*) At 31 December.
Source: Services and Investment Ltd.

Health-related surveys conducted by the ABS

Australian Health Surveys

The last Australian Health Survey was conducted throughout the twelve month period February 1983 to January 1984. The main objective of the survey was to obtain information about the health of Australians and their use of and need for various health-related services and facilities. It is the second national survey of its kind to be conducted by the ABS. The first was conducted during 1977–78.

The approach adopted to collect health information was to ascertain whether any of a range of health-related actions was taken during the reference period and to record the various reasons for which each action was taken. The actions covered included episodes in hospital; consultations with doctors; dental consultations; consultations with other health professionals; consumption or use of medications; days of reduced activity; and, days away from school or work.

The survey aimed to identify wherever possible the specific illness or injury for which the action was taken. However, some persons may have taken a health-related action for which no specific illness or injury could be identified or for reasons other than illness or injury, such as pregnancy supervision, immunisation, contraception etc. Therefore reasons identified as leading to a health-related action were classified into two broad groups: illness conditions and 'other reasons for action'.

In addition to the reasons for taking a health-related action, further information was obtained about the actions themselves e.g. whether surgery undergone in hospital, type of treatment received during a consultation with doctor or a dental consultation, number of times a particular action was taken during the reference period, whether actions such as use of medication or reduced activity were advised by a doctor etc. Information was also collected on illnesses and injuries experienced for which no action was taken. Summary results of the survey are published in *Australian Health Survey 1983* (4311.0); more detailed results are published in *Use of Health Services* (4325.0); *Illness Conditions Experienced* (4356.0); *Consequences of Illness* (4357.0); and *Health Related Actions taken by Australians* (4358.0). A sample file on magnetic tape containing unit record data from the survey is also available. For further information see *Information Paper—Australian Health Survey, 1983—Sample File on Magnetic Tape* (4324.0).

Health Insurance Surveys

These surveys have been conducted for the years 1979–84 and 1986. The 1984 survey covered employed wage and salary earners in capital cities only.

The 1986 survey sought information on levels of private health insurance cover in the Australian community. Results are published in *Health Insurance Survey, Australia, March 1986* (4335.0). An excerpt is shown below.

It is planned to conduct another Health Insurance Survey in June 1988.

NUMBER OF PERSONS IN CONTRIBUTOR UNITS: TYPE OF HEALTH INSURANCE BY STATE AND TERRITORY, MARCH 1986
('000)

Type of health insurance	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Australia*
With private health insurance—									
Hospital and ancillary	2,193.5	1,330.6	716.3	635.9	659.6	195.0	56.7	88.2	5,875.8
Hospital only	667.5	724.7	229.0	83.9	56.8	33.4	5.5	27.3	1,828.3
Ancillary only	108.3	93.7	63.6	78.4	62.6	16.2	4.8	10.4	437.9
Type of insurance not known	22.9	18.9	6.6	4.6	7.4	3.0	*	*	66.1
Total	*2,992.3*	*2,167.9*	*1,015.5*	*802.8*	*786.5*	*247.5*	*68.0*	*127.7*	*8,208.1*
Without private health insurance	2,370.0	1,850.6	1,462.3	533.7	586.3	201.5	63.0	102.7	7,170.0
Total	**5,362.3**	**4,018.5**	**2,477.8**	**1,336.4**	**1,372.7**	**449.1**	**131.0**	**230.3**	*(a)***15,457.2**

(a) Includes 79,100 persons about whom no health insurance details were known. These 79,100 persons were the dependent members of 68,100 contributor units reporting only single rate insurance and were therefore not covered by that insurance. They are not included elsewhere in this table.

HUMAN QUARANTINE

The Australian approach to a world problem

(*This special article has been contributed by the Commonwealth Department of Community Services and Health*)

Quarantine in Australia began with the arrival of the First Fleet at Sydney Cove and has since remained a major public health pre-occupation.

However it was not until 1909 that a federal quarantine service was created as a unit of the Department of Trade and Customs.

The federal Constitution had provided for quarantine as the only specific health power of the new Commonwealth Parliament but it was not until 1921 that federal Cabinet approved the creation of a Ministry of Health. The Director of Quarantine became the Director-General of Health and the quarantine services were transferred from the control of the Minister for Trade and Customs to the Minister for Health.

Administration of the Quarantine Act also involved responsibility for quarantine with respect to animals and plants moving into Australia. However in 1984 the functions relating to animal and plant quarantine were transferred to the Commonwealth Department of Primary Industry, the responsibility for human quarantine remaining with the Department of Health.

Early problems

When the First Fleet arrived, Sydney Cove was regarded as a healthy place. But the convicts and soldiers were not free from the epidemic scourges common in the more civilised parts of the world. Diseases recorded in the struggling days of the first settlement included cholera, dysentery, smallpox, typhoid fever and venereal diseases.

In 1789, one year after the arrival of the First Fleet, there was an outbreak of smallpox amongst the Aboriginals, causing deaths over a wide region. However, Governor Phillip did not believe that the epidemic was linked with the arrival of the First Fleet as the first cases of the disease were observed some 15 months after the arrival of the Europeans. It was doubted that the smallpox virus was capable of sustaining over such a long period of time.

To combat smallpox, supplies of vaccine were sought from England and by 1806, 1,000 of the population of 7,000 had been vaccinated.

The first line of defence against the importation of disease was also established in this period. In 1804, vessels from New York were ordered into quarantine for fourteen days on arrival at Port Jackson because of an 'infectious distemper'[1] raging in their home-port. In the following year the ship *Richard and Mary* was quarantined 'till further orders' in Sydney Harbour as the crew was 'infected with a dangerous fever'.[2]

As the Australian colonies developed, each used quarantine as a primary safeguard of the community's health. Medicine was just beginning to establish the basis of a scientific approach while public health techniques were generally confined to establishing and maintaining clean water supply and sewerage systems, and enforcing standards for food handling and quarantine. The practice of separating travellers suspected of being disease carriers was well established, dating back to Venice in the fourteenth century.

First quarantine measures[3]

The fragmented nature of the Australian colonies and their differing quarantine measures in the days of sail were not then of great public concern. The time taken on the voyage from Europe, England or America ensured that any infectious disease incubating among passengers or crew would have broken out by the time the ship arrived at its Australian destination and could be detected and dealt with. Quarantine measures were generally able to prevent the diseases penetrating the port population.

With the increasing speed of sea transport in the latter half of the last century, the opening of the Suez Canal and the growing practice of ships calling at a number of Australian ports instead of the earlier practice of only one, the picture began to change. Ships using the

Suez route were not only reaching Australia more quickly, but were touching at Middle Eastern and Asian ports where serious diseases were endemic.

In 1884 the Government of New South Wales convened a conference of representatives from each colonial government, known as 'The Australasian Sanitary Conference of Sydney, NSW, 1884'. It called for a co-ordinated scheme of quarantine for both Australia and the nearby Pacific Islands. The delegates were insistent that a co-ordinated quarantine system be accompanied by effective internal sanitation measures. Their report said:

> Quarantine can be, and is, of value commensurate with its costs only to countries whose internal sanitation is good; it cannot be considered, therefore, except as a part of the general subject of State Medicine.[4]

As part of an Australia-wide quarantine system the conference sought the establishment of two quarantine stations—one at Albany in Western Australia and the other at Cooktown in Queensland, the two main shipping approaches to Australian ports. Nothing came of the recommendations, but the need to protect the people of Australia from imported disease was not lost sight of altogether. When the Constitution of the Commonwealth of Australia was finally established, quarantine measures were included in the legislative powers of the Commonwealth. Health measures as such, however, were to remain a province of the States.

The newly-formed Commonwealth Government found very early in its life that it had to become involved in a practical way with health measures when, one year after it came into being, it had to deal with the plague which had reached Australia in 1900. Though not the first time that the disease had appeared in Australian ports, it was the first time since the Commonwealth had assumed responsibility for quarantine measures. The outbreak lasted ten years in a sporadic pattern affecting all States except Tasmania. Although it did not reach alarming proportions the occurrence prompted co-ordinated action by the States.

Plague and national quarantine

It had been established by then that infected fleas from rats spread plague, and Commonwealth action to prevent the entry of the disease was sought. In 1904 health authorities from each State and the Commonwealth met and recommended the creation of a Federal Quarantine Service, to be controlled by the central government but operated by the Chief Health Officers in each State, to whom authority would be delegated by the Commonwealth. Finally in 1906, the six State Premiers agreed to hand over quarantine administration to the Commonwealth, and on 1 July 1909 the Federal Quarantine Service began operations, within the Department of Trade and Customs.

However, this somewhat loose method of Commonwealth-State co-operation soon ran into difficulties. In 1910 Victoria withdrew from the system, with the State Government claiming that the performance of quarantine duties by its senior officer interfered with State health duties. The Commonwealth was urged to appoint its own staff and in August 1911 this was done with the appointment of a Chief Quarantine Officer for Victoria.

With the exception of Tasmania, all the States found problems which interfered with the smooth working of the original proposal and by 1916 a Commonwealth Medical Chief Quarantine Officer had been appointed to each of the mainland States. In Tasmania the original system continued until July 1929.

The main problems of this exercise in State–Commonwealth co-operation revolved around the Commonwealth being called upon to administer a public service with part-time staff. The States found difficulty in carrying out their ordinary health duties because of the arrangement. The situation was further complicated by the fact that the Commonwealth was legally responsible for a service which was administered by officers who were not responsible to the Commonwealth.

The powers of the Commonwealth were seen as complementary to those of the States and not dominant. The States, on the other hand, could prescribe measures but did not have the facilities to carry them out. The Quarantine Act was amended by the Commonwealth on a number of occasions in the next few years as new problems arose. The amendments expanded the Commonwealth's authority in quarantine matters to cover internal epidemics, as well as improving overall quarantine methods for diseases from outside the country.

Influenza epidemic

Among the influences leading to the establishment of the Commonwealth Department of Health in 1921 was the international influenza epidemic at the end of World War I. The Commonwealth and the States were unable to co-ordinate quarantine and health measures. Added to this, it was feared that troops returning home would introduce many of the diseases prevalent in the areas in which they had served. Newspaper columns were filled with conflicting statements from the various governments.

The epidemic was well under way in Australia by 1919 and had a drastic effect on community life. Because of the infectious nature of the disease, gatherings were discouraged, theatres and hotels closed, masks were worn in public and antiseptic fumes regularly inhaled. People became fearful as, one after the other, Australia's cities reported deaths by pneumonic influenza.

But if the citizens at home found the restrictions introduced to fight the disease irksome, what of the troops returning from the trenches of Europe and the deserts of the Middle East after four years of war? Many instances were reported of unruly reactions by troops who, expecting a heroes' welcome, were met by quarantine officials instead.

Returned men object to treatment

One outstanding incident was the 'mutiny' of the troops returning on the *Argyleshire,* with Sydney the final port of call. At their first Australian port, the troops had to coal their own ship because of quarantine restrictions which were imposed again in Melbourne. In Sydney a case of influenza was diagnosed and the men were put into a makeshift camp at the North Head Quarantine Station. The men said the camp was unsuitable, being infested with snakes—sixty snakes were killed the first night.

The following day about nine hundred of the troops marched out of the Quarantine Station and down the hill to Manly wharves. There they boarded a ferry for the city.

They were met by the Army's State Commandant, Major-General Lee, who heard their complaints about the North Head camp. He castigated them for their 'unsoldierly' conduct and ordered them to Sydney Cricket Ground to continue their quarantine. In good order the men marched to the Sydney Cricket Ground but halted outside, refusing to enter until they were told of the conditions of their quarantine and the length of time it would take.

Major-General Lee refused to give any assurances, but the men entered after conferring with State Cabinet Ministers and being told exactly what was required of them. The release of the men began two days later after medical examination.

The confinement was hard on all the troops but particularly for those who lived in the suburbs surrounding the Sydney Cricket Ground. There were many anguished comments reported from the men (some of whom could see their homes across the park), their wives and parents. Emergency food supplies were organised by volunteers to feed the men before they entered the Sydney Cricket Ground and during their quarantine period, although they were also fed by the Army. Small boys provided a messenger service to and from local stores. Messages and money were dropped over the fences and parcels hauled up on ropes, while many an emotional re-union was carried on over the distance separating the crowd outside and the men at the walls and windows of the Cricket Ground.

Hookworm campaign

In 1918 hookworm infestations of serious proportions were discovered in north Queensland and a joint campaign was carried out involving the Commonwealth Government, the States and the International Health Board of New York. They joined in a five year campaign to survey and treat the disease in Australia. This exercise provided a final impetus to the pressures which pushed the hesitant Commonwealth into a sphere which had until then been the responsibility of State and local authorities.

Changing patterns of world disease, increasing travel, developments in public health, increasing emphasis on individual freedom, advances in technology, and more enlightened and better-informed bureaucracies have led to major changes in the philosophies and strategies of human quarantine in recent times, and especially in the last decade.

The comforting isolation of our island position and the natural barriers of time and distance became less and less relevant as transport became speedier and more flexible, and trade and travel increased.

National responsibility and development

The Department of Community Services and Health has had overall national responsibility for human quarantine since the creation of the Department in 1921. The responsibility has been a heavy one as the health of every Australian has been dependent on effective quarantine management and operation. Notwithstanding dramatic recent world advances with the eradication and control of many human diseases, others continue to pose serious problems in many countries and new, highly dangerous diseases have emerged on the world scene. This emphasises the need for continuing vigilance.

The establishment of a high security human quarantine treatment unit at the Fairfield Infectious Diseases Hospital in Melbourne as a national reference centre for the treatment of quarantine disease was an important development in new arrangements designed to meet present day needs.

The decision was a direct response to changing world disease patterns. With the elimination of smallpox worldwide—a public health triumph achieved under the sponsorship of the World Health Organisation—Australia no longer has a need for the large scale isolation capability which our capital city human quarantine stations currently provided. These stations are being progessively closed.

Emergence of other diseases

There are, of course, a number of other quarantine diseases to which Australia remains susceptible. These diseases continue to pose serious problems overseas and the health authorities remain alert to any adverse trends. The occasional imported case of typhoid and cholera, and the disturbing and relatively frequent cases of other food and water borne diseases on international aircraft arriving in this country, further attest to the continuing need for vigilance by a quarantine service ready to react to any exotic disease emergency.

In recent years the world has also seen the emergence in Africa of new, highly dangerous viral haemorrhagic fevers, the best known of which are Lassa fever and Marburg virus disease. These and other quarantine diseases, have long incubation periods which exceed the travel time from any part of the world. Disease symptoms in the traveller may not emerge until some days after his arrival in Australia.

There is general agreement among Commonwealth and State health authorities that the best approach to these developments is to integrate selected quarantine functions into the health care framework in each State. By arrangement, treatment, care and investigation of individual cases are undertaken by the States.

With the high standards of health care and sanitation in Australia, the possibility of a major outbreak of Lassa fever, Marburg virus and similar diseases following an imported case, is reduced significantly.

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CHAPTER TEN

EDUCATION

State and Commonwealth Government responsibilities in education

The governments of the six Australian States and the Northern Territory have the major responsibility for education, including the administration and substantial funding of primary, secondary and technical and further education. The Commonwealth Government is directly responsible for education services in the Australian Capital Territory, administered through an education authority, and for services to Norfolk Island, Christmas Island and the Cocos (Keeling) Islands. The Commonwealth Government provides supplementary finance to the States, and is responsible for the total funding of universities and colleges of advanced education. Apart from its financial role, the Commonwealth is involved in initiating and co-ordinating policy and in maintaining a national perspective.

The State governments administer their own systems of primary, secondary and technical and further education through government departments responsible to State Ministers. In three States, a single Education Department is responsible for these three levels of education. In New South Wales, Victoria and South Australia, there is a separate body responsible for technical and further education.

An historical summary of the development of education in Australia since 1788 is included in this chapter. Detailed information on the education systems of the States may be found in the respective State *Year Books*. Chapter 27 of this *Year Book* provides details of the situation in the Territories.

Administrative structure of education at the national level

As mentioned above, the Commonwealth Government has direct responsibility for education only in the Australian Capital Territory and the external Territories. The Commonwealth Government, however, has special responsibilities for the Aboriginal people and for migrants, as well as the power to provide assistance for students. Moreover, the Commonwealth Government is responsible for international relations in education. In July 1987 the Commonwealth Department of Education was merged with the Commonwealth Department of Employment and Industrial Relations, the Department of Science and the Office of Youth Affairs to become the Department of Employment, Education and Training. The education responsibilities entail grants to schools, student assistance, overseas students, awards and exchanges, technical and further education in the A.C.T., tertiary education, language policy, educational research and statistics, publications, Aboriginal education, multicultural education, Asian and women's studies, and education and the arts. The Department liaises with the media and community groups and produces a range of publications relating to education in Australia. Selected publications are listed at the end of this chapter.

The Australian Constitution empowers the Commonwealth Government to make grants to the States and to place conditions upon such grants. This power has been used to provide financial assistance to the States specifically for educational purposes. There are two national commissions which advise the Commonwealth Government on the financial needs of educational institutions throughout Australia, these are the Commonwealth Schools Commission and the Commonwealth Tertiary Education Commission.

Generally, the Commissions are required to consult with State authorities (and, in the case of the Commonwealth Schools Commission, with the authorities conducting non-government schools) and such other persons, bodies and authorities as they think necessary before making recommendations to the Commonwealth Government on the amount of financial assistance required, both in general and for specific purposes, to meet the needs of each sector.

The National Aboriginal Education Committee (NAEC) is the principal adviser to the Minister for Employment, Education and Training and the Commonwealth Government on all matters concerning Aboriginal education. The Committee has responsibility for providing advice on the educational needs of Aboriginal and Torres Strait Islander people and appropriate methods of meeting those needs.

Commonwealth Government education authorities also function as co-ordinating agencies for joint activity by the States and Territories in a number of fields. For example, the Australian Council on Tertiary Awards (ACTA), formerly the Australian Council on Awards in Advanced Education, seeks, in consultation with State co-ordinating bodies, to establish consistency in awards in advanced education and TAFE by establishing, maintaining and publishing a register of such awards.

A number of bodies at the national level have an important co-ordinating, planning or funding role.

- The Australian Education Council (AEC) membership is made up of Commonwealth and State Ministers for Education, and normally meets three times in each two years as a consultative body to consider matters of mutual interest, such as the material and personnel needs of schools and co-operation in educational developments generally. It is assisted by a Standing Committee including the Directors-General of Education in each State and the Secretary of the Commonwealth Department of Employment, Education and Training.
- The Conference of the Directors-General of Education normally meets twice each year. Matters discussed and decisions reached at the Conference have a direct influence in each State and Territory on such matters as pre-service and in-service education of teachers, school staffing, curricula, special education, building programs, administrative procedures and the extent of uniformity and diversity between education systems. Under the auspices of the Directors-General Conference, regular meetings of senior specialist personnel are held.
- The Australian Council for Educational Research (ACER) is an independent national research organisation. The Council is funded by annual grants from each of the State and Northern Territory Governments and the Commonwealth Government, as well as from its own activities. The Council is involved in its own and contract research in co-operation with education systems and plays a central role in the areas of educational measurement and evaluation as well as research into learning and teaching and in the social context of education. The ACER acts as the Australian national centre for the program of international surveys of student achievement. Authority for ACER's policy rests with its governing council.
- The TAFE National Centre for Research and Development Ltd was established in 1980 and is a company limited by guarantee. The main sources of funding are the Commonwealth Government (50 per cent) and the States and Territories (on a per capita basis). Initially involved in curriculum development issues, the Centre's general research thrust is now aimed towards industries' requirements of TAFE, common skills across crafts, multi-skilling, skill formation and retraining. The National TAFE Clearing House within the Centre provides a service disseminating information on research and development activities within TAFE in Australia.

There is also a number of non-government organisations which have a co-ordinating role in education at the national level. These include the National Catholic Education Commission, the National Council for Independent Schools, the Australian Vice-Chancellors' Committee, the Australian Committee of Directors and Principals of Colleges of Advanced Education, the Conference of Directors of TAFE and the Australian High School Principals' Association.

HISTORICAL DEVELOPMENTS IN AUSTRALIAN EDUCATION

Schools

There was no provision for the education of children who arrived in Sydney with the First Fleet in 1788, and it was not until 1792 that any interest in their schooling was manifested. In that year the first school was established by Governor Phillip to cater for the colony's children, who by then numbered approximately 200. The first voluntary effort to establish a school was made later at Hawkesbury, the leading farming centre of the colony. As the settlers did not have the means to erect a school-house, the Governor had it built at the expense of the Crown. The settlers signed an undertaking that they would pay an annual sum based on the amount of land granted by the Crown to them, to pay for persons employed to teach the children. This is the first instance of a "school-rate" in Australia, and was imposed before a similar rate was imposed in England.

From 1810 schools were generally established by the various churches by means of grants from the State. The money was spent chiefly on teachers' salaries. Each school was wholly independent and there was no universal education system. In June 1844 the Legislative Council appointed a Select Committee to inquire into education in the colony. The Committee reported that the state of education was extremely deficient. At that stage there were 25,676 children between the ages of 4 and 14 of whom 7,642 received instruction in the State-aided denominational schools, 4,865 in private schools, while approximately 13,000 received no instruction at all. The report stated that the Committee was convinced of the superiority of a general system over a denominational system, and recommended that a uniform system be established for the whole of the colony. Such a system was introduced in 1848, when the Board of National Education was incorporated. A Board of Denominational Education was appointed to distribute the funds voted for denominational schools. For eighteen years these two rival bodies co-existed. It was not until 1866 that the long desired change was effected, when Sir Henry Parkes introduced the Public Schools Act. The provisions of this Act committed the administration of primary education to a single governing body, ensuring a greater measure of consistency in educational policy. Under this Act a Council of Education was incorporated and entrusted with the expenditure of all moneys appropriated by Parliament for primary education. The Council established and maintained public schools and was permitted to grant aid to denominational schools. The colony benefited greatly from the establishment of the Council of Education; modern school buildings and equipment were introduced, effective discipline was enforced, and systematic and progressive instruction arranged. The Council of Education was responsible for 259 public schools attended by 19,641 pupils and 310 denominational schools attended by 27,986 pupils. However, public feeling was that the work of public instruction, being of such magnitude and involving so large an expenditure from the public funds, should come under a department of the government and placed in the hands of a Minister directly responsible to Parliament. In 1880 an Act, the New South Wales Public Instruction Act, embodying these principles was introduced under the auspices of Sir Henry Parkes and became law.

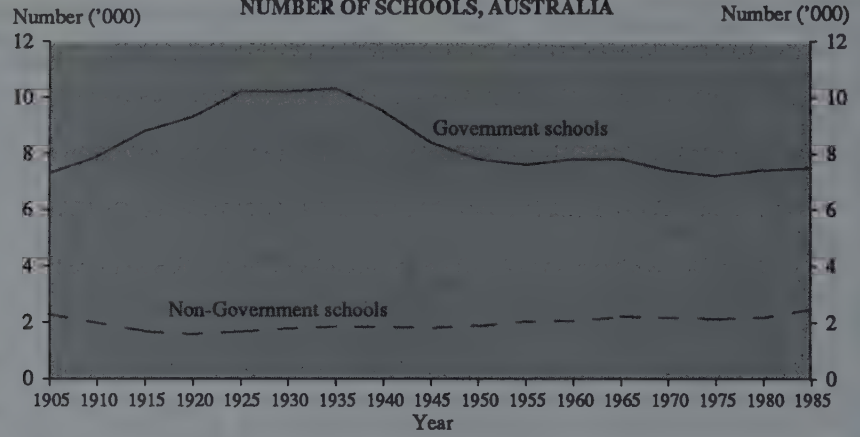
When the Commonwealth of Australia came into being, education remained a State responsibility. From fragmented beginnings, all States developed consistent approaches to education and, by the early 1900s, primary education throughout Australia was compulsory and free. In most States there existed a liberal provision of scholarships and bursaries to higher State schools, secondary schools and universities.

A major problem facing all States was that of a small population spread across large areas. Portable schools were set up in temporary settlement areas such as the goldfields and sites of extensive railway works. Itinerant teachers travelled long distances teaching at pupils' houses. In Queensland, for example, during 1927, itinerant teachers' districts covered nearly 320,000 square miles, while a distance of 58,000 miles was travelled in visiting 1,139 children. All the States provided education by correspondence, for children in localities not reached by other methods. In 1927, over 3,500 children were on the roll of the Correspondence School of New South Wales. In 1951, Schools of the Air were established in the Northern Territory. Using two-way radio equipment, first developed by the Royal Flying Doctor Service, children hundreds of miles apart were able to share in the same lesson, with the teacher and pupils talking directly to each other. Schools of the Air now operate in New South Wales, Queensland, South Australia, Western Australia and the Northern Territory, serving children over an area of almost one million square miles.

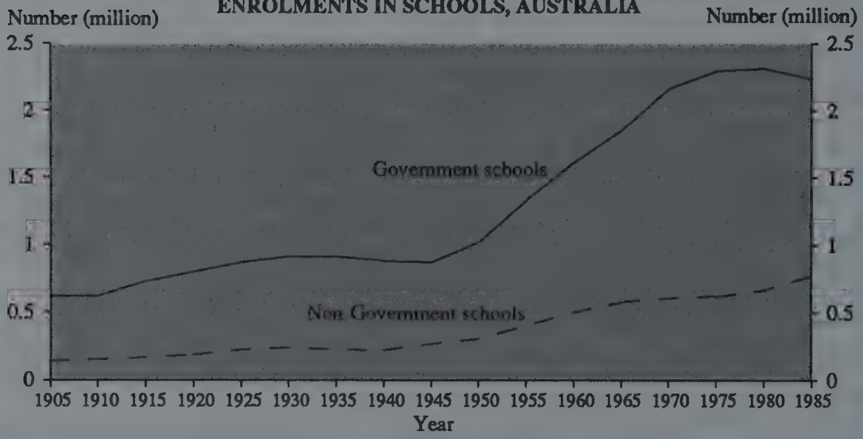
The 1920s saw a considerable increase in school enrolments, with subsequent pressures on the education system. In New South Wales, the Minister drew attention to the disabilities under which the Education Department was labouring, owing to a shortage of teachers, and a lack of funds to provide necessary new buildings, equipment and renovations. The problem of teacher shortages was, for the most part, overcome by introducing a more liberal scale of salaries. However, the provision of new school buildings and equipment proved to be an ongoing problem.

As Australia's population increased, the sphere of education broadened and began to encompass other sectors of society. In each of the capital cities, well-equipped public libraries were established. In particular, the institutions in Sydney and Melbourne compared very

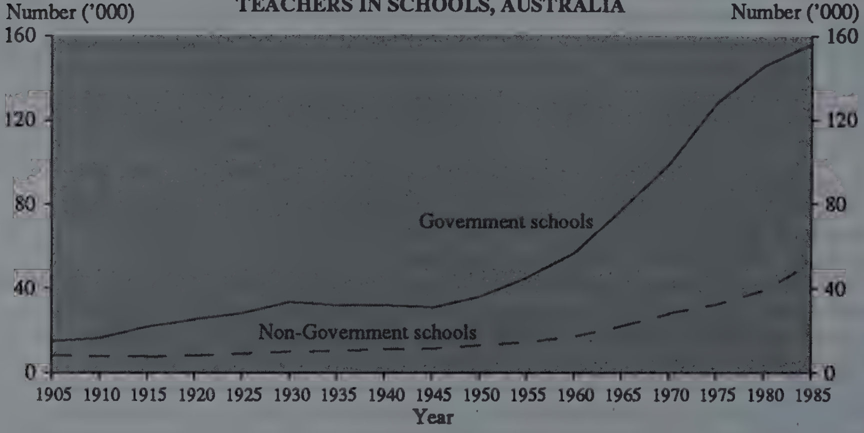
NUMBER OF SCHOOLS, AUSTRALIA



ENROLMENTS IN SCHOOLS, AUSTRALIA



TEACHERS IN SCHOOLS, AUSTRALIA



favourably with similar institutions overseas. Evening schools were established in a number of States. By 1935, New South Wales had 36 evening schools with an average weekly enrolment of 4,138.

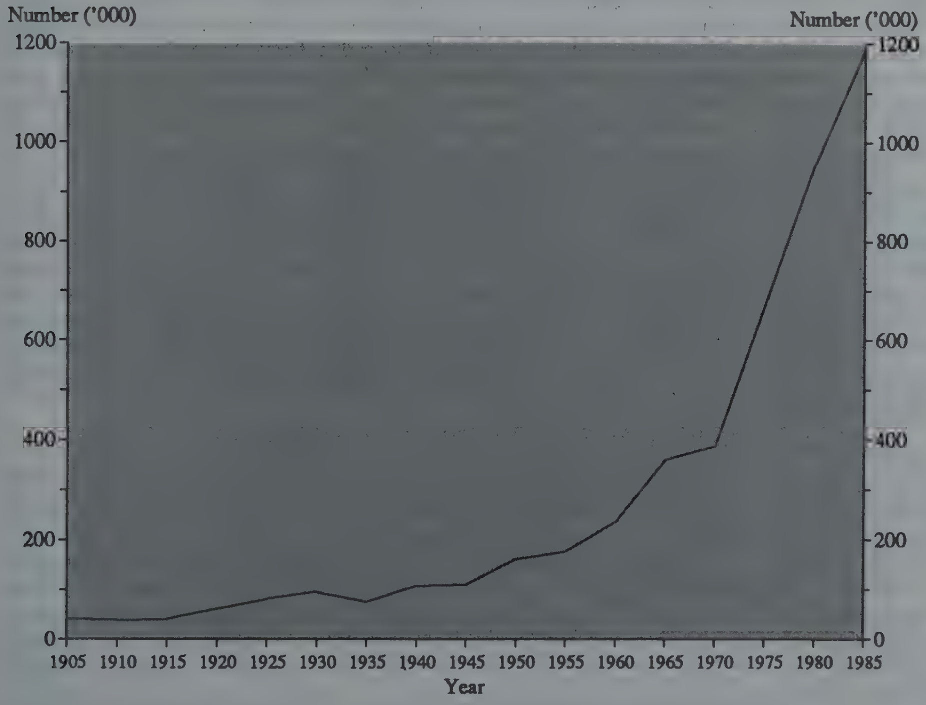
The Depression of the 1930s enveloped Australia in an acute economic crisis. During the most severe period, building programs were restricted, teacher training was cut back and the numbers of teachers (and their salaries) were reduced, but the numbers of pupils increased. The immediate effect of World War II on education programs was very similar to the experience during the Depression of the previous years. With the return of ex-military personnel to the teaching service, and the allocation of large sums of money for educational activities, the post-war years saw marked developments in education. New curricula appeared which were aimed at increasing the development of social skills. In those areas of Australia where Aboriginal people retained their own languages and communities, policies were implemented to meet their educational needs.

The Commonwealth Government currently has responsibility for migrant education for which State governments also contribute resources, particularly in school level programs. Major improvements in the general standard of services to migrant and ethnic groups, which took place during the 1970s, included an important development in the education field. The Commonwealth Schools Commission encouraged a flexible approach to teaching English as a second language to children from non-English speaking backgrounds, with funding for this purpose first being provided in 1970. By 1980, roughly one-fifth of total school enrolments was made up of students from non-English speaking backgrounds.

Technical education

Technical education was not regarded as being of great importance in the early years of the settlement of Australia, although technical instruction in mining received considerable attention in several States. The most notable of these was the Ballarat School of Mines in

ENROLMENTS IN TECHNICAL EDUCATION, AUSTRALIA



Note: The figures from 1965 onwards reflect a major re-organisation of Technical education. Prior to 1981 the data relate to gross enrolments. From 1981 the data relate to net students.

Victoria, which opened in 1870. A Technical Education Board was appointed in New South Wales as early as 1883, but was dissolved in 1889, and its functions carried on as a branch of the Public Instruction Department. The Sydney Technical College opened in 1892 and colleges were opened in a number of the larger country towns not long after.

In 1913 a conference was held in New South Wales between the education authorities, leading employers and employees with a view to re-organising technical education in that State. The decisions of this conference determined the future direction of technical education in Australia. Only those persons actually engaged as apprentices or journeymen were to be admitted to college classes. Advanced trade courses were introduced, as was a liberal scheme of scholarships.

Enrolments in technical colleges increased considerably with the return of servicemen from World War I, and in 1920 over 62,000 persons were enrolled at such institutions throughout Australia. By 1930 the main lines of technical education had been determined, but the field continued to expand and develop, growing from 86 colleges with 67,426 students in 1935 to 146 colleges and 159,310 students in 1951. The desire for the comparative economic security of skilled jobs, and the increasing demand for skilled workers stimulated public interest in all States. In 1975 a Technical and Further Education Commission was established, but in 1977 the Act which established the Commission was repealed. The *Tertiary Education Commission Act 1977* was brought into operation, establishing the Tertiary Education Commission (primarily concerned with inter-sectoral matters) and separate Councils responsible for the affairs of the specific sectors of technical and further education, universities and colleges of advanced education. Technical and further education (TAFE) has established itself as a mainstream sector of tertiary education in Australia. TAFE courses provide a wide range of vocational training for trade and technical occupations, serve as a stepping stone to semi-professional and professional qualifications as well as providing a range of adult education, leisure and general enrichment programs.

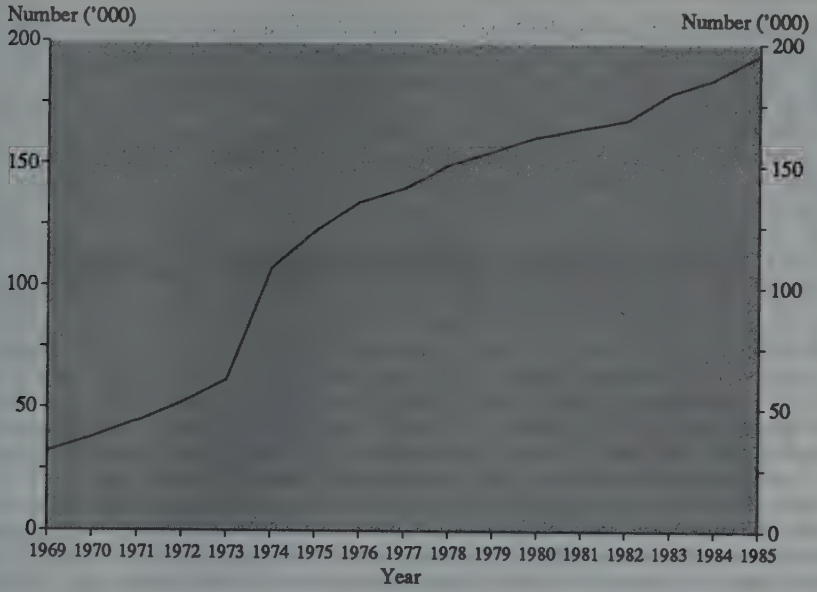
Advanced education

Colleges of advanced education in Australia were set up as a result of the recommendations of the Report of the Committee on the Future of Tertiary Education in Australia. In 1965 the Committee recommended, among other things, that there was a need for a greater diversity of tertiary institutions. It was also proposed that in each State an institute of colleges be set up which might include technical and agricultural colleges, specialist institutes and such new tertiary institutions as might be recommended. The Committee was anxious to see academic standards improved in the constituent colleges, and education in the technologies broadened. The Government accepted these recommendations and the Prime Minister, Mr Menzies, referred to the institutes of colleges as providing advanced instruction.

These new institutions became generally known as colleges of advanced education, and in 1965 the Commonwealth Advisory Committee on Advanced Education was set up to advise the Government on the levels of financial assistance to be provided to the States for the development of the new institutions. In 1971 a statutory body, the Australian Commission on Advanced Education, was established and it assumed the functions previously discharged by the Advisory Committee. From 1 January 1974 tuition and certain other fees were abolished at colleges of advanced education, universities, approved teachers colleges and technical colleges. In the same year the title of the Commission was changed to 'Commission on Advanced Education'. The early 1970s saw a rapid growth in the numbers of students enrolled in colleges of advanced education. This period also saw a considerable diversification in the range and type of courses available.

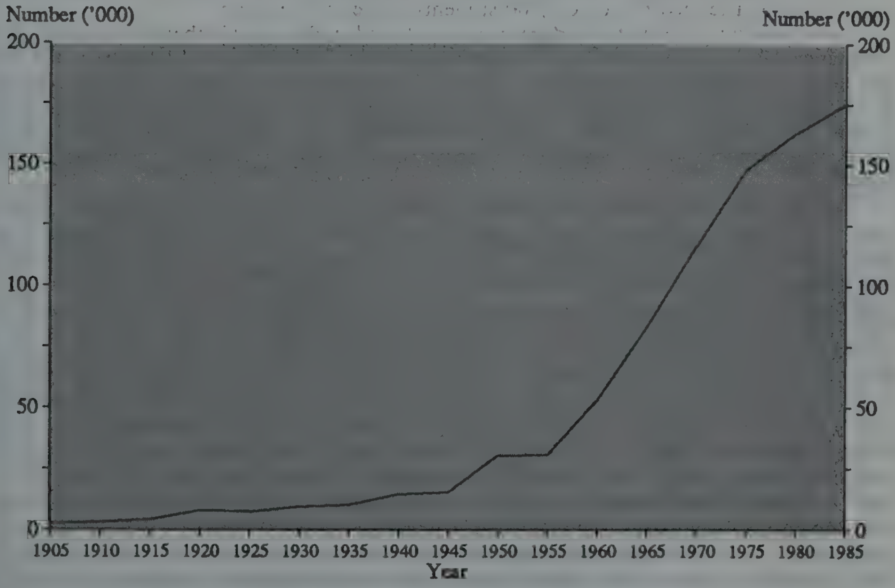
During the mid-1970s although student enrolments continued to increase, the total participation rates of 17 to 19 year olds in higher education fell sharply. The rate dropped from around 11 per cent in 1976 to around 9.5 per cent in 1981 before the trend was reversed. Increased participation and greater equity could only come about through greater opportunities and improved access, and the Commonwealth Government committed itself to creating and supporting additional enrolments. The Government looked to higher education to increase the output of skills related to economic and industrial growth, especially technological and scientific skills. After more than a decade in which the proportion of students continuing to the final years of secondary education had been unchanged (at about one-third of each class), there was a substantial increase, resulting in a greater number of students seeking places in advanced education institutions. This was due in part to the significant worsening of labour market opportunities in 1982–83, but it also reflected a growing recognition by students, their parents and the community generally, that a sound education had become increasingly important.

NUMBER OF STUDENTS IN ADVANCED EDUCATION, AUSTRALIA



Note: In 1973-74 Teachers Colleges became Colleges of Advanced Education.

NUMBER OF STUDENTS IN UNIVERSITIES, AUSTRALIA



Universities

The movement for the establishment of Australia's first university may be said to have originated as far back as 1825, with the institution of the old Sydney Grammar School. The original school was not, however, very successful. It was succeeded in 1830 by a trustee institution known as the Sydney Public Free Grammar School. In 1849 the proprietors of the institution presented a petition to the Legislative Council to have the College converted into a university. The Act of Incorporation of Sydney University received the assent of the Governor on 1 October 1850, and the first Senate was appointed on 24 December. Professorships were soon instituted, and the first matriculation examination was held in 1852.

The University of Melbourne was established by Act of Parliament assented to on 22 January 1853, and the University was formally inaugurated on 13 April 1855. Women attended lectures there for the first time in 1881. Established by Act of Parliament in 1874, the University of Adelaide was the third to be founded in Australia, and in 1880 became the first to be given the power to grant degrees to women. The Act to establish the University of Tasmania was assented to on 5 December 1889, and under Statute dated 13 April 1905, the Zeehan School of Mines and Metallurgy was affiliated to the University. The passing of the Act to establish the University of Queensland took place in 1909, and lectures were given on 20 March 1911, by professors of classics, chemistry, physics and mathematics, and engineering. The University of Western Australia was established under an Act which received royal assent on 16 February 1911, and the institution opened in March 1913.

To enable as many people as possible to benefit from the establishment of universities, extension lectures were soon commenced. Under this scheme, lecturers were engaged to provide classes and examinations at various suburban and country centres. Sydney University instituted these in 1886, and in 1892 a Board was appointed to administer them. The practice of extension lectures soon spread to other States.

In 1910, Government grants to universities totalled £51,760, whilst fees totalled £53,422. The Government grants were supplemented by substantial public donations.

In 1913 Workers' Educational Associations were formed in all States of Australia to bring the university into closer relationship with the general public. The work of the Association proved very popular and the movement grew quickly, aided by direct grants from State governments. By 1927 there were over 5,000 students throughout Australia participating, most of whom were taking three-year courses while working at their daily occupations.

Evening tutorial classes were established in various centres, and by the mid-1920s over sixty of these, attended by some 2,000 students, were in operation.

The Canberra University College was established under the Canberra University College Ordinance 1929, and by virtue of a regulation of the University of Melbourne, the College was empowered to provide approved lectures in a number of subjects. Lectures commenced in 1930, and 30 students were enrolled during that year. In March 1938, lectures commenced at the New England University College of Armidale, New South Wales. The College was initially governed by the University of Sydney, becoming the University of New England in 1954.

University enrolments receded slightly during the war period, but rose again in the last year of the war. In 1948, the rapid post-war expansion became strikingly apparent, with a peak enrolment of 32,453 students. The post-war period also saw a noticeable expansion in the range of courses offered, particularly in the younger and smaller universities. The Commonwealth Scholarship Scheme, based on a plan drawn up by the Universities Commission, was introduced in January 1951. Under this scheme 3,000 scholarships were made available each year to children who had completed secondary courses. In addition to this scheme, eligible ex-service personnel received training at universities and similar institutions at Commonwealth expense under the Reconstruction Training Scheme. Of the 53,466 persons who applied for assistance under the scheme, 24,992 full-time and 19,237 part-time students were selected for training. By the end of 1951 more than 18,000 of these had successfully completed their courses. The demand on universities continued to increase, and by 1962 the total enrolments in Australian universities had reached a figure of 63,317 (0.6 per cent of the population) compared with the early post-war peak of 32,453 (0.4 per cent of the population) in 1948. Major developments took place in the Australian university structure; the University of New South Wales was created from the earlier University of Technology in 1958; in the same year, Monash University was established in Victoria; in 1960 the Australian National University was reconstituted combining undergraduate and post-graduate facilities; the University of Queensland set up the University College of Townsville in 1961; the University of New South Wales established the Wollongong University College in 1962; in 1965 the University of Newcastle was created from the Newcastle University College; in 1966 the University of Adelaide at Bedford Park became the Flinders University of South Australia; and in 1967 Macquarie University and La Trobe University were established in New South Wales and Victoria respectively. The 1970s saw a steady increase in the number of students enrolled in university courses, together with further progress in the development of universities. James Cook University, established as a university college of the University of Queensland in 1961, became autonomous in 1970. Griffith University, situated close to Brisbane, was the eighteenth to be established in Australia, and teaching commenced in 1975. Deakin University, Victoria's first non-metropolitan university, commenced teaching in 1977.

An important development took place in tertiary education with the abolition of tuition and certain other compulsory fees from 1 January 1974. By 1984, students enrolled in Australian universities totalled 172,678, an increase of almost 21 per cent in ten years. The age distribution of students underwent a change during this period. In 1974 the majority of students were in the 19 years and under, and 20 to 24 year age groups, 34.5 per cent and 36.4 per cent respectively. In 1984 the 19 years and under age group had fallen to 28.4 per cent and the 20 to 24 year age group had fallen to 32.2 per cent of total enrolments. The 30 to 39 year age group grew from 10.1 per cent in 1974 to 17.2 per cent in 1984, and the 40 years and over age group grew from 4.3 per cent in 1974 to 9.0 per cent in 1984.

From the establishment of Australia's first university in the 1850s the country now boasts 19 such institutions. Total enrolments are approaching 180,000 persons, whilst university staff, expressed in full-time equivalent units, exceed 35,000 persons full-time and 2,500 persons part-time, with universities in Australia now costing well over $1.1 billion per annum of public funds.

As Australia celebrates the bicentenary of its colonisation, the education systems face new and demanding challenges. The rapid developments in high technology during the 1980s call for skills in new and different areas, whilst the extremely competitive job market demands that school leavers prepare themselves as fully as possible. The education systems must find ways of addressing these issues while still allowing those in the system to develop as individuals.

New developments in education

In making education more relevant to the economy, the Commonwealth is addressing the problem of skills shortages in the high technology industries. This is being achieved by encouraging more young people to complete Year 11 and 12, examining levels of participation in maths and science (particularly among school girls), encouraging young women to enter non-traditional skilled trades and engineering, and allocating a large number of new places in tertiary institutions to science and technical courses.

The Commonwealth Government has strongly supported greater participation in tertiary education. Record funding increases to tertiary education have created new places, especially in areas closely related to economic productivity.

The National Policy on Languages document released in May 1987 explores and makes recommendations on the need for all Australian children to learn both English and another language, with particular emphasis on community languages and languages of economic importance.

Other Commonwealth priority areas are:

- improving outcomes from primary education, especially junior primary, as the all important foundation for future learning;
- raising participation in senior secondary schooling by disadvantaged groups;
- improving the representation and attainment of girls across all subject areas of the curriculum;
- assisting teachers to bring about the necessary improvements.

Focussing resources in these priority areas should have an effect on Year 11 and 12 participation rates in future years.

Pre-school education

All States and Territories except one have a policy of making pre-school education universal for children in the years prior to school entry. A majority of the States and Territories have made considerable progress towards this goal. Most pre-schools are conducted on a sessional basis (i.e. sessions of two to three hours for two to five days per week). Pre-school programs generally favour the free play approach with emphasis on children's social and emotional development through creative activities. Parents often contribute by assisting at some sessions or by the purchase of play materials and educational resources. Attendance fees are not usually charged in those States where pre-schools are government-run, but in others, fees may be payable to private or voluntary organisations.

Primary and secondary education

Compulsory education

School attendance is compulsory throughout Australia between the ages of 6 and 15 years (16 years in Tasmania). Each State or Territory has its own specific requirements. The majority of children commence primary school at about 5 years of age, except in Western Australia, where they start at 6 years. Primary schooling generally begins with a preparatory or kindergarten year, followed by 12 grades to complete a full secondary course of study. While the final two years of schooling fall outside the compulsory stage of education, over two-thirds of students remain at school until Year 11 and nearly 49 per cent remain until Year 12. The proportion of students continuing to the final years of schooling has increased significantly since 1981, and in November 1986 the Minister for Education set a target of 65 percent of all students going on to Year 12 by 1992.

Non-government schools

All children between the prescribed ages must attend either a government school or some other recognised educational institution. While the majority of Australian children attend government schools, about one in four attend non-government schools at some stage of their school life. In the last few years, enrolments in the non-government sector have increased to 793,588 in 1986, i.e. more than 26 per cent of all school enrolments. Non-government schools operate under conditions determined by government authorities, usually registration boards, in each State and Territory. These conditions require that minimum education standards are met and that the schools have satisfactory premises. The majority of non-government schools are Catholic and there is a Catholic Education Commission in each State and at the national level. Most other non-government schools are under the auspices of, or run by, other religious denominations. The capacity of the Commonwealth Government to assist with the cost of educating children in denominational schools throughout Australia was upheld by the High Court in 1981.

Funding of schools

Primary and secondary education is free in government schools in all States and Territories. Fees for the hire of text books and other school equipment, however, may be charged, particularly in secondary schools. Most State governments provide financial assistance to parents under specified conditions for educational expenses. Assistance includes various types of scholarships, bursaries, transport and boarding allowances, many of which are intended to assist low-income families. The Commonwealth Government also provides a number of schemes of assistance to facilitate access to education. An estimated 99,200 secondary students aged 16 and over from low income families will receive assistance in 1987 under AUSTUDY, which has absorbed the former Secondary Allowances Scheme (SAS) and is described briefly in a later section.

The Country Areas Program, administered by the Commonwealth Schools Commission, provides special assistance to country schools. This program receives over $10 million annually. The government assists selected students to undertake Master's and Ph.D. courses through the Post-graduate Awards Scheme; also provides living allowances for migrants in full-time English skills courses at colleges of technical and further education; and provides funds to State education departments to facilitate the lending of video equipment and materials to isolated primary-age children.

Major responsibility for funding government schools lies with State governments which provide about 93 per cent of general running costs. The Commonwealth contribution represents about 7 per cent. The Commonwealth is the major source of public funding for non-government schools, providing about 65 per cent against the States' 35 per cent. The Commonwealth brought stability to schools' funding with the 1984 recurrent funding plan. As part of an eight year plan, the levels of general Commonwealth grants to government and non-government schools were set in legislation for 1985 to 1988, enabling schools to plan ahead with confidence.

In 1985, the Commonwealth introduced new general recurrent funding arrangements for government and non-government schools. These new arrangements provide stability and long-term security for both sectors by providing significant increases in funding over an eight year period to 1992. Grants for the four years 1985 to 1988 have been included in the legislation. A mid-term review of the policy has been undertaken, focussing on technical and administrative aspects.

Following the introduction of the funding plan in 1985, the Commonwealth Government negotiated resource agreements with all State government and non-government school system authorities. These make available the increases in general recurrent grants and direct them to improving education outcomes within priority areas, by means of agreed projects.

In 1987, the Government decided that new arrangements should apply to the administration of the general element of the Capital Grants Program for non-government schools. As from 1988, capital funds are being paid as block grants to authorities formally approved for this purpose. Most Catholic Education Authorities and Associations of Independent Schools have expressed interest in block grants.

School organisation and operation

Primary schooling provides a general elementary program lasting for 7 or 8 years until Years 6 or 7. Students enter secondary schools at Year 7 in some State systems and at Year 8 in others. Secondary education is generally comprehensive and co-educational. Most students attend schools reasonably near to their homes. Usually primary and secondary schools are separate institutions, but in some country areas there are area or central schools which provide both forms of schooling. Non-government schools follow a similar pattern, but a significant though declining proportion are single sex institutions. In Tasmania and the Australian Capital Territory, attendance for the final two years of government schooling is at separate secondary colleges.

Generally, schools in Australia have a considerable degree of autonomy. Most State departments have established regional administrations which are responsible for matters such as planning school buildings and deploying staff while a central curriculum unit provides general guidelines on course planning. In general, individual schools determine teaching and learning approaches within the guidelines and offer options within resources available and the attitudes and interests of students. Some systems encourage school-based curriculum development and, in the case of the Australian Capital Territory, school-based assessment in place of external examinations. While schools usually have a parents' association, there has been encouragement of greater community participation in general decision-making at school level in some systems through parent representation on school councils and boards.

Specialist services and programs provided in schools include educational or vocational counselling by a permanent or visiting teacher, English as a Second Language program by specialist teachers (especially in schools with significant numbers of children from non-English speaking backgrounds), special programs designed to assist Aboriginal school children (including the widespread use of Aboriginal teachers' aides and bilingual education programs in communities where the children's first language is an Aboriginal language), a variety of programs for gifted and talented children, and remedial assistance for children with learning difficulties.

Primary education

In the lower primary years the main emphasis is on the development of basic language and literacy skills, simple arithmetic, moral and social education, health training and some creative activites.

In the upper primary years there is development of the skills learned in the earlier years. English, mathematics, social studies, science, music, art and craft, physical education and health are studied. There are also optional subjects such as religious instruction and, in some schools, foreign and community languages and instrumental music.

Students in Australian primary schools usually have only one teacher for all subjects, and are promoted each year on the basis of completing the previous year, rather than on achievement. In schools where open plan learning styles have been adopted, the method of team teaching (more than one teacher to a class) and multi-age grouping of students is often practised.

Secondary education

In some systems, the first one or two years of secondary school consist of a general program which is followed by all students, although there may be some electives. In later years a basic core of subjects is retained with students being able to select additional optional subjects. In other systems, students select options from the beginning of secondary school.

The core subjects in all systems are English, mathematics, science and, usually, a humanities or social science subject. Optional subjects may include, for example, a foreign language, a further humanities or social science subject, commerce, art, crafts, music, home economics, a manual arts subject, agriculture, physical education or health education. Some schools offer optional courses in subjects such as consumer education, conversational foreign languages, shorthand, typing, road safety, drama and leisure-time activities.

In senior secondary years, a wider range of options is available in the larger schools and there is an increasing trend towards encouraging individual schools to develop courses suited to the needs and interests of their students, subject to accreditation and moderation procedures.

Victoria is the only State which retains a system of secondary technical education. These schools offer a wide range of elective technical subjects. In the Northern Territory, two Aboriginal residential colleges assist Aboriginals to participate in secondary education.

Students in Australian secondary schools generally have different teachers for each separate subject area, though, like primary schools, variations may occur where open planned or more flexible methods have been adopted. Promotion is, again, generally chronological, but students may be grouped according to ability after an initial period in unstreamed classes.

Examinations and assessment at each level are carried out by individual schools except Year 12 in the systems which have retained external examinations at Year 12 level. Students attaining the minimum school leaving age may leave school and seek employment, or enrol in a vocationally oriented course in a TAFE institution or a private business college. For many TAFE courses, completion of Year 10 of secondary school is a minimum entry requirement. For those continuing to the end of secondary school (Year 12), opportunities for further study are available in TAFE institutions, universities, colleges of advanced education and other post-school institutions. The latter include non-government teachers colleges and a few single purpose institutions such as the Australian Film, Television and Radio School, the Australian Maritime College and the National Institute of Dramatic Art.

Students' eligibility for entry to universities and colleges of advanced education is assessed during, or at the end of, the final two years of secondary schooling. Five States and the Northern Territory use different combinations of school assessment and public examinations. In Queensland and the Australian Capital Territory eligibility to enter higher education is determined from moderated and standardised school assessments. Several education systems are currently reviewing their senior secondary school assessment procedures.

Other schooling arrangements

Children may be exempted from the requirement of compulsory attendance if they live too far from a school or suffer a physical disability. These children usually receive correspondence tuition. Special schools are available in larger centres for socially, physically and mentally handicapped children in cases where they are not catered for in special or regular classes in ordinary schools.

In addition to correspondence tuition there are provisions for children in isolated areas. Schools of the Air operate in New South Wales, South Australia, Queensland, Western Australia and the Northern Territory. Schooling for the children of Aboriginal groups in remote areas of the Northern Territory is conducted by Aboriginal teaching assistants supported by visiting teachers from established schools.

Special education is provided by State governments and non-government authorities in specialist schools, in special classes or units in regular schools or by withdrawal from regular classes for periods of intensive assistance by special staff. In all States and particularly in New South Wales, Queensland and Victoria, parents have formed voluntary organisations to establish additional schools catering for their childrens' special needs. The Commonwealth Government provides funds to State authorities to assist in the upgrading of special education facilities.

Boarding facilities are available at some non-government schools mainly in the larger towns and cities. A small number of government schools, in particular those catering for groups such as Aboriginals, have residential hostels close by.

SCHOOLS, STUDENTS AND TEACHING STAFF BY CATEGORY OF SCHOOL (AND NON-GOVERNMENT AFFILIATION), AUSTRALIA, 1986

	Government schools	*Non-government schools*				All schools
		Anglican	*Catholic*	*Other*	*Total(a)*	
Number of schools	7,589	107	1,712	677	2,496	10,085
Number of students—						
Males	1,134,704	38,669	290,894	68,142	397,705	1,532,409
Females	1,073,097	32,955	290,129	72,799	395,883	1,468,980
Persons	**2,207,801**	**71,624**	**581,023**	**140,941**	**793,588**	**3,001,389**
Number of teachers(*b*)—						
Males	62,974	2,428	11,264	4,193	17,885	80,859
Females	85,360	2,661	21,919	5,923	30,503	115,863
Persons	**148,334**	**5,089**	**33,183**	**10,116**	**48,388**	**196,722**

(*a*) Includes special schools administered by government authorities other than the State Departments of Education in Victoria and Western Australia. (*b*) Full-time teaching staff plus full-time equivalents of part-time teaching staff.

STUDENTS BY CATEGORY OF SCHOOL AND SEX, AUSTRALIA

	1981	*1982(a)*	*1983(a)*	*1984*	*1985*	*1986*
GOVERNMENT SCHOOLS						
Males	1,179,428	1,171,506	1,173,036	1,162,979	1,147,561	1,134,704
Females	1,119,975	1,111,459	1,107,986	1,097,572	1,083,272	1,073,097
Persons	*2,299,403*	*2,282,965*	*2,281,022*	*2,260,551*	*2,230,833*	*2,207,801*
NON-GOVERNMENT SCHOOLS						
Males	344,017	355,964	368,321	r379,652	389,385	397,705
Females	343,979	355,718	366,463	r377,400	385,951	395,883
Persons	*687,996*	*711,682*	*734,784*	*r757,052*	*775,336*	*793,588*
SCHOOLS						
Males	1,523,445	(*a*)	(*a*)	r1,542,631	1,536,946	1,532,409
Females	1,463,954	(*a*)	(*a*)	r1,474,972	1,469,223	1,468,980
Persons	**2,987,399**	(*a*)	(*a*)	**r3,017,603**	**3,006,169**	**3,001,389**

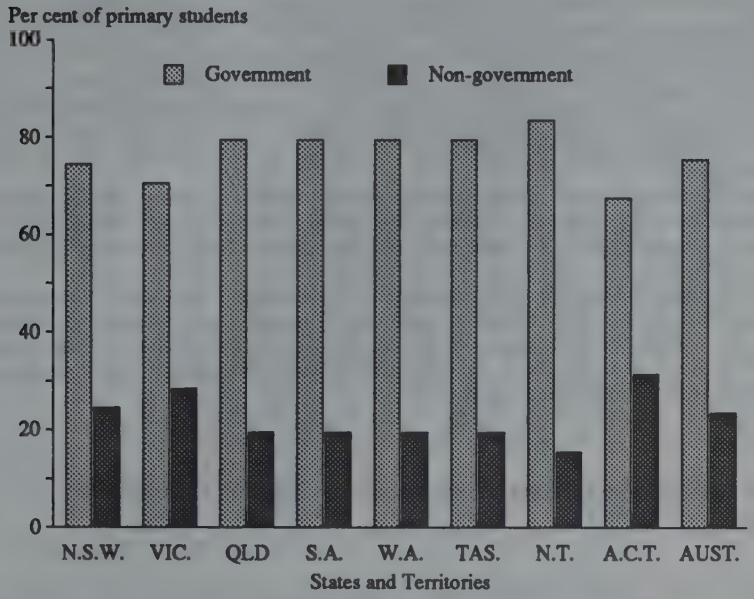
(*a*) The government and non-government school sectors have not been totalled for 1982 and 1983 as the two sectors vary in scope and coverage for those years. In addition, care should be exercised when comparing data in this publication with that prior to 1982 and 1984 for the government and non-government series respectively.

NUMBER OF FULL-TIME STUDENTS BY CATEGORY OF SCHOOL (AND NON-GOVERNMENT AFFILIATIONS), SEX AND LEVEL/YEAR OF EDUCATION, AUSTRALIA

Level/Year of education	*Government schools*	*Non-government schools (a)*				*All schools*		
		Anglican	*Catholic*	*Other*	*Total*	*Males*	*Females*	*Persons*
				1985				
Primary—								
Pre-year 1(*b*)	119,805	1,615	35,281	5,273	42,169	83,541	78,433	161,974
Year 1	181,293	1,975	45,594	6,913	54,482	121,923	113,852	235,775
Year 2	179,257	2,017	45,184	6,809	54,010	119,778	113,489	233,267
Year 3	178,631	2,354	45,124	6,802	54,280	119,399	113,512	232,911
Year 4	181,233	2,664	46,191	7,139	55,994	121,494	115,733	237,227
Year 5	186,022	3,507	48,243	7,744	59,494	126,128	119,388	245,516
Year 6	192,495	4,093	49,506	8,439	62,038	130,783	123,750	254,533
Year 7(*c*)	72,454	1,482	14,420	2,878	18,780	46,651	44,583	91,234
Ungraded	9,817	22	544	1,255	1,821	6,993	4,645	11,638
Total primary	*1,301,007*	*19,729*	*330,087*	*53,252*	*403,068*	*876,690*	*827,385*	*1,704,075*
Secondary—								
Year 7(*d*)	122,114	6,048	35,057	9,217	50,322	88,483	83,953	172,436
Year 8	202,857	9,267	50,887	15,362	75,516	142,200	136,173	278,373
Year 9	203,253	9,301	50,340	15,117	74,758	141,237	136,774	278,011
Year 10	181,360	8,954	47,035	13,791	69,780	127,775	123,365	251,140
Year 11	120,362	8,481	34,274	12,150	54,905	86,543	88,724	175,267
Year 12	74,745	6,855	24,815	9,901	41,571	55,713	60,603	116,316
Ungraded	5,701	20	560	448	1,028	3,743	2,986	6,729
Total secondary	*910,392*	*48,926*	*242,968*	*75,986*	*367,880*	*645,694*	*632,578*	*1,278,272*
Special(*e*)—								
Primary	6,766	19	237	1,193	1,449	5,109	3,106	8,215
Secondary	2,576	9	202	787	998	2,211	1,363	3,574
Not identifiable as primary or secondary	10,092	—	128	1,813	1,941	7,242	4,791	12,033
Total special	*19,434*	*28*	*567*	*3,793*	*4,388*	*14,562*	*9,260*	*23,822*
Total students	**2,230,833**	**68,683**	**573,622**	**133,031**	**775,336**	**1,536,946**	**1,469,223**	**3,006,169**
				1986				
Primary—								
Pre-year 1(*b*)	124,417	1,756	36,448	5,827	44,031	86,361	82,087	168,448
Year 1	180,110	2,048	46,375	7,478	55,901	122,178	113,833	236,011
Year 2	177,382	2,086	45,936	7,296	55,318	119,499	113,201	232,700
Year 3	176,011	2,511	45,856	7,416	55,783	118,729	113,065	231,794
Year 4	177,111	2,778	45,819	7,556	56,153	119,518	113,746	233,264
Year 5	179,480	3,536	47,236	8,252	59,024	122,159	116,345	238,504
Year 6	184,491	4,172	48,879	8,909	61,960	126,406	120,045	246,451
Year 7(*c*)	70,818	1,524	14,354	3,259	19,137	46,296	43,659	89,955
Ungraded	9,997	10	201	1,323	1,534	6,954	4,577	11,531
Total primary	*1,279,817*	*20,421*	*331,104*	*57,316*	*408,841*	*868,100*	*820,558*	*1,688,658*
Secondary—								
Year 7(*d*)	114,638	6,293	35,405	9,746	51,444	85,251	80,831	166,082
Year 8	189,799	9,156	50,653	15,601	75,410	135,901	129,308	265,209
Year 9	200,966	9,673	50,493	15,953	76,119	141,132	135,953	277,085
Year 10	189,773	9,522	49,219	15,442	74,183	133,074	130,882	263,956
Year 11	124,392	8,975	36,060	13,354	58,389	90,000	92,781	182,781
Year 12	82,515	7,534	27,311	10,752	45,597	61,038	67,074	128,112
Ungraded	5,608	19	207	398	624	3,691	2,541	6,232
Total secondary	*907,691*	*51,172*	*249,348*	*81,246*	*381,766*	*650,087*	*639,370*	*1,289,457*
Special(*e*)—								
Primary	5,568	15	244	532	791	3,922	2,437	6,359
Secondary	3,020	16	259	472	747	2,303	1,464	3,767
Not identifiable as primary or secondary	11,705	—	68	1,375	1,443	7,997	5,151	13,148
Total special	*20,293*	*31*	*571*	*2,379*	*2,981*	*14,222*	*9,052*	*23,274*
Total students	**2,207,801**	**71,624**	**581,023**	**140,941**	**793,588**	**1,532,409**	**1,468,980**	**3,001,389**

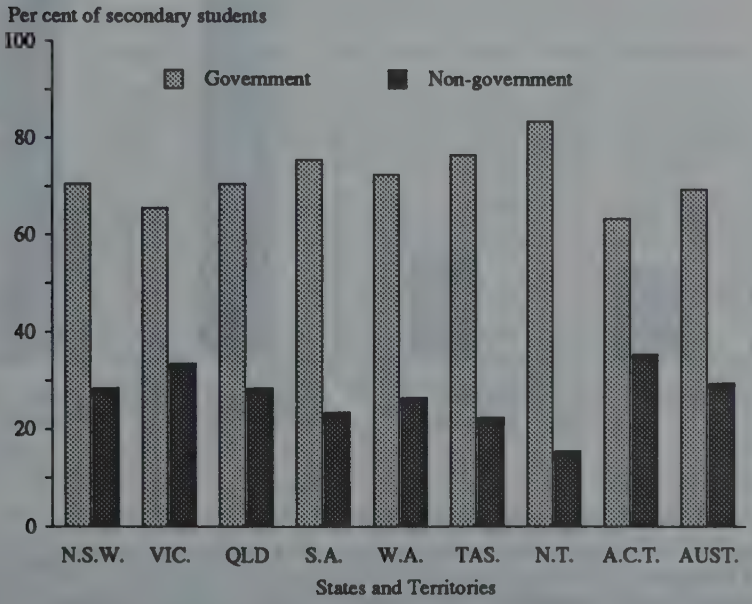
(*a*) Includes full-time students attending special schools administered by government authorities other than the State Departments of Education. (*b*) Pre-year 1 comprises *Kindergarten* in N.S.W. and A.C.T.. *Preparatory* in Vic. and Tas. *Reception* in S.A. and *Transition* in N.T. (*c*) *Year 7* is primary education in Qld, S.A., W.A. and N.T. (*d*) *Year 7* is secondary education in N.S.W., Vic., Tas. and the A.C.T. (*e*) Attending special schools.

PRIMARY STUDENTS (a): PERCENTAGE IN GOVERNMENT AND NON-GOVERNMENT SCHOOLS, STATES AND TERRITORIES, 1986



(a) Excluding students in special schools.

SECONDARY STUDENTS (a): PERCENTAGE IN GOVERNMENT AND NON-GOVERNMENT SCHOOLS, STATES AND TERRITORIES, 1986



(a) Excluding students in special schools.

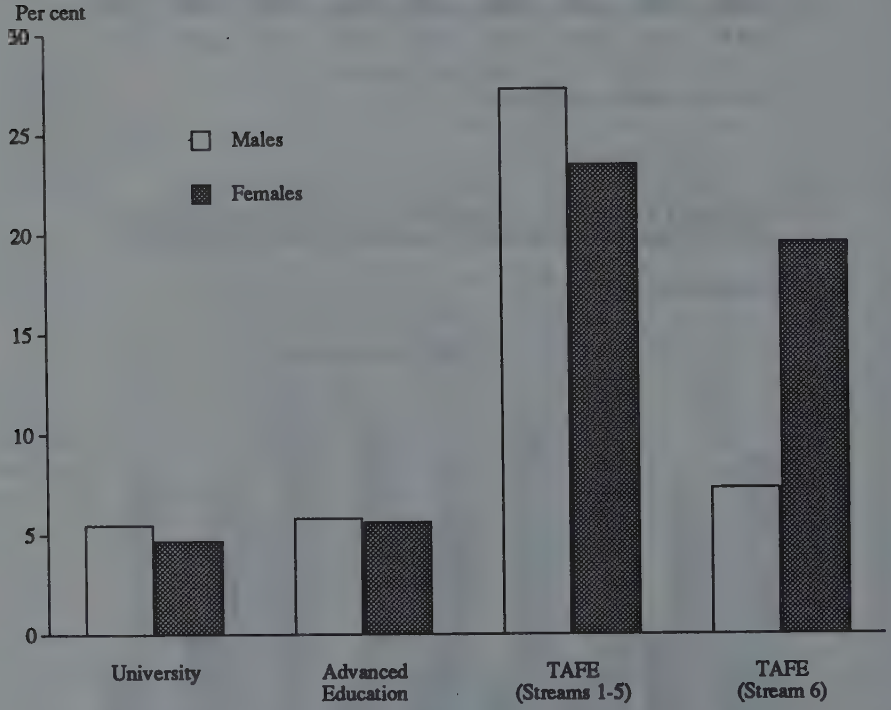
Tertiary education

Tertiary education is provided in universities and colleges of advanced education (which are known collectively as higher education institutions) and in technical and further education institutions. Higher education institutions are self-governing, established in the States under State legislation. Technical and further education institutions operate as part of State-wide TAFE systems. Tuition fees are not charged for Australian students undertaking award courses in government funded tertiary education institutions. An administration charge was introduced for higher education students in 1987. Some institutions offer full fee courses for overseas students.

A recent development in Australian tertiary education has been the establishment of private institutions. By way of example the Bond University of Technology has been established in Queensland. It will operate on a fee paying basis and plans to take its first students in 1988.

At the national level, the Commonwealth Government, through its Department of Employment, Education and Training, provides a number of schemes of assistance for Australian students to facilitate access to education. A brief description of these schemes was given in *Year Book* No. 64 and a list of these schemes is included in the statistical table 'Student Assistance Schemes' (*see* page 430).

STUDENTS IN TERTIARY EDUCATION: SECTOR AND SEX, 1985



Technical and further education—TAFE

The major part of technical and further education in Australia is provided in government administered institutions variously known as colleges, schools, or centres of technical and further education. There is also some TAFE provision in some colleges of advanced education, agricultural colleges and adult education authorities. These institutions are spread widely throughout Australia in both metropolitan and country areas. They vary greatly in size and in the scope of their educational provisions, though the largest tend to be located in metropolitan regions. TAFE institutions operate from early February to mid-December, in either three terms or two semesters depending on the institution.

Each of the States provides the bulk of the finance for its own institutions. The Commonwealth Government provides supplementary funds to the States on the basis of recommendations from the Commonwealth Tertiary Education Commission.

Government TAFE institutions offer an extremely wide range of vocational and non-vocational courses. Courses may be designed to supplement previous training, to provide specialised instruction in particular aspects of job skills, pre-vocational training prior to employment, preparatory or bridging instruction to permit entry to a chosen vocational course or adult education for personal interest, leisure or general enrichment purposes. Courses may be classified into the following six streams: professional, para-professional, trades, other skilled, preparatory and adult or further education. Courses in the first two streams lead to the award of a diploma or associate diploma, in the third and fourth streams to a certificate, while the less formal shorter courses in the fifth and sixth streams do not lead to any qualification. The majority of TAFE courses are part-time, concurrent with employment, but there is also provision for full-time and external study.

There are additionally some non-government bodies which offer technical and further education of a non-apprenticeship nature. Business colleges offer courses in secretarial studies, while agencies such as the Workers Educational Association and a range of voluntary groups help meet adult education needs in the community.

The Commonwealth Tertiary Education Commission conducts an annual TAFE statistical collection. A key feature of the collection is its emphasis on the individual *student* as the unit of reporting rather than on enrolment.

TECHNICAL AND FURTHER EDUCATION: STUDENTS WITHIN EACH STREAM OF STUDY

(*Source:* Commonwealth Tertiary Education Commission)

									Australia		
Stream of study	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Males*	*Females*	*Persons*
					1984						
1. Professional . .	1,502	1,177	142	35	201	—	—	244	1,869	1,432	3,301
2. Para-professional	110,607	37,942	16,625	25,376	43,353	4,557	1,402	3,969	130,100	113,731	243,831
3. Trade—											
Basic trade	43,122	30,558	15,315	9,362	8,989	3,039	946	1,550	101,593	11,288	112,881
Post-trade . .	14,565	9,922	2,406	—	5,049	1,308	380	714	31,764	2,580	34,344
4. Other skilled .	102,018	48,330	42,934	31,164	23,775	6,950	2,556	11,833	125,049	144,511	269,560
5. Preparatory . .	75,035	59,205	13,220	41,294	10,389	4,312	3,066	8,290	92,691	122,120	214,811
Total streams 1–5 (a) . .	**325,588**	**179,265**	**90,642**	**102,511**	**82,210**	**19,023**	**8,213**	**24,653**	**455,115**	**376,990**	**832,105**
6. Adult education	109,564	115,043	75,762	36,970	56,038	19,515	7,766	7,858	121,441	307,075	428,516
					1985						
1. Professional . .	1,813	1,029	131	27	231	—	—	315	2,036	1,510	3,546
2. Para-professional .	117,505	40,366	17,917	24,854	48,710	4,537	1,537	3,853	136,877	122,402	259,279
3. Trade—											
Basic trade	40,887	31,562	14,326	8,357	8,223	3,212	1,023	1,669	96,522	12,737	109,259
Post-trade . .	15,506	9,016	2,680	—	2,489	1,321	303	791	29,184	2,922	32,106
4. Other skilled .	101,184	56,147	52,455	32,070	18,180	8,125	3,408	11,285	131,967	150,887	282,854
5. Preparatory . .	74,018	63,618	16,789	35,379	10,296	3,853	4,324	9,242	91,017	126,502	217,519
Total streams 1–5 (a) . .	**329,382**	**192,930**	**104,298**	**96,357**	**81,026**	**19,882**	**9,856**	**25,463**	**461,550**	**397,644**	**859,194**
6. Adult education	123,715	132,269	79,936	38,442	47,849	21,501	5,188	8,457	125,394	331,963	457,357

(*a*) The sum of the stream of study components does not add to the total as students enrolled in two or more streams have only been counted once in the total.

NOTE: The collection methodology precludes the net number of students in Streams 1 to 5 being added to the net number of students in Stream 6. The resultant figure would contain multiple counting to the extent that students undertaking programs in Streams 1 to 5 may also be enrolled in Stream 6 programs during the reference year.

TECHNICAL AND FURTHER EDUCATION: STUDENTS (STREAMS 1 TO 5) BY MODE OF ATTENDANCE, SEX AND AGE GROUP, AUSTRALIA

(*Source:* Commonwealth Tertiary Education Commission)

	Mode of attendance								
	Internal		*External*		*Multimodel*		*Total*		
Age group (years)	*Males*	*Females*	*Males*	*Females*	*Males*	*Females*	*Males*	*Females*	*Persons*
					1984				
Under 17	39,492	34,620	583	716	306	253	40,381	35,589	75,970
17	33,597	18,877	553	872	369	300	34,519	20,049	54,568
18	40,881	20,991	861	1,119	485	449	42,227	22,559	64,786
19	36,022	17,253	946	1,141	489	396	37,457	18,790	56,247
20–24	89,161	56,119	6,219	4,938	1,691	1,203	97,071	62,260	159,331
25–29	47,798	38,628	6,432	3,431	1,135	671	55,365	42,730	98,095
30–39	61,911	67,618	8,614	4,836	1,495	1,086	72,020	73,540	145,560
40–49	25,812	35,437	3,029	1,954	426	429	29,267	37,820	67,087
50–64	12,521	21,109	1,347	987	169	155	14,037	22,251	36,288
65 and over	3,677	5,102	295	219	32	20	4,004	5,341	9,345
Not stated	25,001	32,894	3,470	3,006	296	161	28,767	36,061	64,828
Total	**415,873**	**348,648**	**32,349**	**23,219**	**6,893**	**5,123**	**455,115**	**376,990**	**832,105**
					1985				
Under 17	39,699	33,800	748	886	318	415	40,765	35,101	75,866
17	33,332	19,157	599	1,021	331	391	34,262	20,569	54,831
18	39,809	21,579	943	1,363	525	517	41,277	23,459	64,736
19	34,015	17,328	1,025	1,306	551	538	35,591	19,172	54,763
20–24	86,775	57,699	6,343	5,350	2,261	1,691	95,379	64,740	160,119
25–29	49,927	41,305	6,711	4,294	1,489	953	58,127	46,552	104,679
30–39	65,436	72,489	9,454	6,075	1,850	1,489	76,740	80,053	156,793
40–49	28,045	39,433	3,331	2,468	536	698	31,912	42,599	74,511
50–64	13,391	22,186	1,350	1,142	190	227	14,931	23,555	38,486
65 and over	4,954	6,903	248	184	19	20	5,221	7,107	12,328
Not stated	25,980	33,364	1,090	756	275	617	27,345	34,737	62,082
Total	**421,363**	**365,243**	**31,842**	**24,845**	**8,345**	**7,556**	**461,550**	**397,644**	**859,194**

TECHNICAL AND FURTHER EDUCATION: TEACHING STAFF (*a*) BY TYPE OF APPOINTMENT AND ACTIVITY

(*Source:* Commonwealth Tertiary Education Commission)

Type of appointment and activity	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Australia*
					1984				
Full-time									
TAFE only	5,105	4,139	1,829	1,634	1,513	515	230	442	15,407
Multi-sector	180	1,270	142	17	29	3	45	42	1,728
Total	**5,285**	**5,409**	**1,971**	**1,651**	**1,542**	**518**	**275**	**484**	**17,135**
Part-time	8,194	8,314	4,362	4,163	2,637	2,641	430	1,582	32,323
					1985				
Full-time									
TAFE only	5,363	4,449	2,080	1,677	1,563	518	229	477	16,356
Multi-sector	121	891	136	17	18	3	48	47	1,281
Total	**5,484**	**5,340**	**2,216**	**1,694**	**1,581**	**521**	**277**	**524**	**17,637**
Part-time	8,722	9,785	4,620	4,391	2,642	2,237	736	1,817	34,950

(*a*) Excludes teaching staff engaged in teaching TAFE courses reported by:
- New South Wales Board of Adult Education;
- Australian Maritime College;
- New South Wales State Conservatorium of Music (1985 only).

Colleges of advanced education

Colleges of advanced education normally operate over three terms or two semesters, beginning in early to late February and running to mid-December. Students commencing courses will have completed a full secondary education, or will have demonstrated that they have high probability of successfully completing a course. There is keen demand for places at many institutions and quotas are often placed on new enrolments at many of the larger colleges with students able to enrol on a full-time or part-time basis and there are usually provisions for mature-age entry.

Colleges of advanced education emphasise undergraduate teaching more than research. Undergraduate courses offered are usually at diploma or degree level, although some associate diploma level courses are also offered. Colleges are able to offer post-graduate level courses, either at diploma or masters degree level. Most colleges have a commitment to part-time study, and many offer 'sandwich' courses, which provide a period of full-time study with associated periods of full-time employment. Some colleges also offer external courses.

Colleges of advanced education offer a great variety of courses embracing such areas as applied science, teacher education, liberal arts, business and secretarial studies and health science studies. The duration of a basic undergraduate course is two to three full-time years, at the conclusion of which an associate diploma, diploma or bachelor degree is awarded.

Some colleges may be large, diversified or multi-vocational institutions, while others are small single purpose institutions. There are 46 colleges of advanced education which can be broadly classified into the following categories:

- central institutes of technology;
- other multi-purpose metropolitan colleges;
- regional colleges;
- specialist colleges.

In addition there are two institutes of advanced education within universities.

The tuition system in colleges of advanced education is similar to that in universities. Lectures, tutorials and seminars are organised by the institution in the subjects offered. Normally, assessment of a student's progress is made by examination and/or completion of prescribed coursework.

Halls of residence are provided at some colleges of advanced education, principally those located in country areas. These can accommodate some, but not usually all, students enrolled at those institutions.

ADVANCED EDUCATION: STUDENTS BY TYPE OF INSTITUTION, AUSTRALIA

	Type of institution					
Course level	*College of advanced education*	*Institute of advanced education within a university*	*TAFE institution*	*Other Common-wealth institution*	*Other*	*Total*
		1985				
Course level—						
Masters degree	2,054	—	—	—	—	2,054
Graduate diploma	23,566	190	86	14	506	24,362
Bachelor degree	104,299	1,203	1,361	119	546	107,528
Diploma	32,371	931	1,000	109	1,137	35,548
Associate diploma	19,408	628	2,748	37	127	22,948
Miscellaneous (*a*)	2,637	8	80	33	33	2,791
Total students enrolled	**184,335**	**2,960**	**5,275**	**312**	**2,349**	**195,231**
		1986				
Course level—						
Masters degree	2,464	—	—	—	—	2,464
Graduate diploma	25,251	179	77	17	498	26,022
Bachelor degree	112,977	1,432	1,606	125	770	116,910
Diploma	34,690	1,042	924	93	1,160	37,909
Associate diploma	19,794	656	2,951	23	90	23,514
Miscellaneous (*a*)	2,146	8	194	48	8	2,404
Total students enrolled	**197,322**	**3,317**	**5,752**	**306**	**2,526**	**209,223**

(*a*) Students who are enrolled in parts of advanced education courses, including single subjects, but who are not proceeding to an award of the institution.

ADVANCED EDUCATION: STUDENTS BY COURSE LEVEL, TYPE OF ENROLMENT, AGE GROUP AND SEX, AUSTRALIA

	1981	*1982*	*1983*	*1984*	*1985*	*1986*
Course level—						
Masters degree	1,142	1,457	1,585	1,815	2,054	2,464
Graduate diploma	20,475	21,443	22,309	22,952	24,362	26,022
Bachelor degree	87,905	93,056	97,260	101,679	107,528	116,910
Diploma	37,911	33,562	35,266	34,581	35,548	37,909
Associate diploma	15,316	16,319	20,202	21,963	22,948	23,514
Miscellaneous (*a*)	2,318	2,751	3,271	2,830	2,791	2,404
Type of enrolment—						
Full-time internal	76,685	77,795	86,325	90,852	97,360	105,019
Part-time internal	64,913	65,992	67,754	67,679	68,759	72,263
External	23,469	24,801	25,814	27,289	29,112	31,941
Age (in years)—						
19 and under	45,095	45,684	48,404	49,957	53,693	58,102
20-29	74,759	75,431	79,984	81,358	83,776	88,594
30-59	43,670	46,366	49,689	52,729	56,453	61,360
60 and over	440	320	439	425	474	487
Not stated	1,103	787	1,377	1,351	835	680
Sex—						
Males	85,439	87,504	93,316	96,544	99,370	103,616
Females	79,628	81,084	86,577	89,276	95,861	105,607
Persons	**165,067**	**168,588**	**179,893**	**185,820**	**195,231**	**209,223**

(*a*) Miscellaneous students were not identifiable prior to 1980. Miscellaneous students are students enrolled in parts of advanced education courses, including single subjects, who are not proceeding to an award.

NOTES: The statistics prior to 1983 relate only to advanced education courses conducted at colleges of advanced education and institutes of advanced education in universities (former CAEs). The statistics for 1983 onwards relate to all advanced education courses conducted within any tertiary education institution in Australia.

ADVANCED EDUCATION: TEACHING AND NON-TEACHING STAFF, AUSTRALIA

(Full-time equivalent units, rounded to whole numbers)

	1981	*1982*	*1983*	*1984*	*1985*	*1986*
Teaching staff (*a*)—						
Full-time	8,781	8,605	9,012	9,079	9,401	9,738
Part-time	1,213	1,223	1,418	1,528	1,638	1,832
Total	**9,994**	**9,828**	**10,430**	**10,607**	**11,039**	**11,570**
Non-teaching staff (*b*)—						
Full-time	10,241	9,874	9,905	10,268	10,306	10,636
Part-time	974	995	966	1,027	1,063	1,132
Total	**11,215**	**10,869**	**10,871**	**11,295**	**11,369**	**11,768**

(*a*) The teaching staff statistics prior to 1983 relate only to the teaching of advanced education courses conducted at CAEs and institutes of advanced education in universities (former CAEs); the statistics for 1983 onwards relate to the teaching of all advanced education courses conducted within any tertiary education institution in Australia. (*b*) Non-teaching staff statistics for all years relate only to CAEs.

Universities

The university year in Australia normally runs from late February or early March to mid-December over three terms or two semesters depending on the institution. Normally students commencing courses will have completed a full secondary education, though most universities have some provisions for admitting other persons who can demonstrate that they have a high probability of successfully completing a course. As with colleges of advanced education, there is high demand for places in universities and there are quotas on new enrolments in most faculties in Australian universities. Although there are usually provisions for mature-age entry, the majority of students proceed straight from school.

UNIVERSITIES: STUDENTS BY COURSE LEVEL, TYPE OF ENROLMENT, AGE GROUP AND SEX, AUSTRALIA

	1981	*1982*	*1983*	*1984*	*1985*	*1986*
Course level—						
Doctorate(*a*)	6,378	7,040	7,195	7,485	7,805	8,064
Masters degree	15,443	16,341	16,338	16,488	16,749	17,366
Bachelor degree	132,372	131,992	133,275	135,605	137,490	142,183
Non-degree	12,418	12,030	12,542	13,100	13,432	13,870
Type of enrolment(*b*)—						
Full-time internal	99,924	100,357	102,801	106,019	107,427	110,670
Part-time internal	51,462	51,900	51,231	50,682	51,562	53,211
External	15,225	15,146	15,318	15,977	16,487	17,602
Age (in years)—						
19 and under	48,085	47,594	47,953	49,018	50,168	53,373
20–29	77,514	77,111	77,583	78,301	78,429	79,106
30–59	40,015	41,576	42,573	43,936	45,286	47,473
60 and over	839	952	1,095	1,232	1,416	1,462
Not stated	158	170	146	191	177	69
Sex—						
Males	95,414	94,354	94,508	95,157	95,146	96,703
Females	71,197	73,049	74,842	77,521	80,330	84,780
Persons	**166,611**	**167,403**	**169,350**	**172,678**	**175,476**	**181,483**

(*a*) Comprises Ph.D.s and doctorates other than Ph.D.s (*b*) Prior to 1983 full-time external students were included with full-time internal students. Since 1983 they have been included in the external category.

UNIVERSITIES: STUDENTS COMPLETING COURSES, BY SEX AND COURSE LEVEL AUSTRALIA

Course level	*1981*	*1982*	*1983*	*1984*	*1985*	*1986*
MALES						
Doctorate (other than Ph.D.)	43	51	45	47	54	59
Doctor of Philosophy (Ph.D.)	711	697	704	761	736	814
Masters degree	1,639	1,617	1,830	1,997	2,016	1,955
Post-graduate diploma	1,452	1,362	1,337	1,393	1,390	1,453
Bachelor degree	14,610	14,208	14,148	14,448	14,572	14,038
Total	*18,455*	*17,935*	*18,064*	*18,646*	*18,768*	*18,319*
FEMALES						
Doctorate (other than Ph.D.)	2	5	3	3	4	8
Doctor of Philosophy (Ph.D.)	184	204	202	195	213	247
Masters degree	617	623	754	846	872	934
Post-graduate diploma	1,662	1,599	1,507	1,634	1,684	1,611
Bachelor degree	10,872	10,999	11,579	11,470	11,879	12,493
Total	*13,337*	*13,430*	*14,045*	*14,148*	*14,652*	*15,293*
PERSONS						
Doctorate (other than Ph.D.)	45	56	48	50	58	67
Doctor of Philosophy (Ph.D.)	895	901	906	956	949	1,061
Masters degree	2,256	2,240	2,584	2,843	2,888	2,889
Post-graduate diploma	3,114	2,961	2,844	3,027	3,074	3,064
Bachelor degree	25,482	25,207	25,727	25,918	26,451	26,531
Total	**31,792**	**31,365**	**32,109**	**32,794**	**33,420**	**33,612**

The Commonwealth Government funds nineteen universities, most of which are located in the capital cities. Universities are autonomous institutions established under Acts of the appropriate parliament. The basic undergraduate course in most disciplines is three or four full-time years in duration, at the conclusion of which a bachelor degree is awarded. A further one to two years of full-time study is required for a masters degree, and three to five years for a doctoral degree. Universities also offer post-graduate diploma courses in some disciplines. All universities offer full-time and part-time courses, and some offer external studies. In 1986, 61 per cent of students were enrolled in full-time study. As well as providing undergraduate courses, Australian universities are centres of post-graduate study and research. Some universities have institutes or units involved exclusively in research and/or post-graduate teaching. In 1986, 14 per cent of university students were undertaking higher degree study.

Courses in Australian universities are normally organised in faculties or schools, and students generally elect to study in a number of subject areas, or departments, within a faculty or school. Universities will generally offer some, but not all, of the following courses of study: agriculture, architecture, arts, dentistry, economics, education, engineering, law, medicine, music, science and veterinary science.

The system of tuition in universities is normally by means of lectures, tutorials, seminars and supervised practical work. Normally, assessment of a student's progress is made by examination and/or completion of prescribed coursework or of individual research.

Most universities have halls of residence on the campus which accommodate some of the students currently enrolled, usually those from remote or country areas. Student organisations on campus provide a wide range of sporting and social facilities for students.

UNIVERSITIES: STAFF BY TYPE OF EMPLOYMENT, AUSTRALIA

(Full-time equivalent units, rounded to whole numbers)

	1981	*1982*	*1983*	*1984*	*1985*	*1986*
Teaching and research staff—						
Full-time	10,692	10,499	10,353	10,454	10,539	10,655
Part-time	1,269	1,108	1,084	1,173	1,212	1,159
Total	*11,961*	*11,607*	*11,437*	*11,627*	*11,751*	*11,814*
Research only staff—						
Full-time	2,161	2,303	2,276	2,409	2,408	2,564
Part-time	83	83	66	63	36	89
Total	*2,244*	*2,386*	*2,342*	*2,472*	*2,444*	*2,653*
General staff—						
Full-time	22,040	21,643	21,752	21,981	22,324	22,481
Part-time	1,116	1,226	1,310	1,157	1,322	1,377
Total	*23,156*	*22,869*	*23,062*	*23,138*	*23,646*	*23,858*
All staff—						
Full-time	34,893	34,445	34,381	34,844	35,271	35,700
Part-time	2,468	2,417	2,460	2,393	2,570	2,625
Total	**37,361**	**36,862**	**36,842**	**37,237**	**37,841**	**38,325**

Programs which span the educational sectors

1987 saw the the introduction of AUSTUDY, a new Commonwealth scheme of financial assistance to secondary and tertiary students aged 16 and over. The Government spent almost $680 million on student assistance in 1987. Income-tested and non-competitive, AUSTUDY replaces the former Tertiary Education Assistance Scheme (TEAS), Secondary Allowances Scheme (SAS) and Adult Secondary Education Assistance Scheme (ASEAS). With its allowance rates aligned from 1988 onwards with unemployment benefits, and with all rates being indexed thereafter, AUSTUDY is a major element in the Commonwealth Government's drive to increase participation in full-time education at the upper secondary and tertiary levels.

STUDENT ASSISTANCE SCHEMES

Scheme	*Number of students at 30 June 1987*	*Assistance ($'000) 1986–1987*
Postgraduate Awards	2,494	20,866
Tertiary Education Assistance Scheme/AUSTUDY Tertiary	106,618	357,415
SAS/AUSTUDY Secondary	67,032	107,083
ASEAS/AUSTUDY Adult Secondary	3,359	11,280
Aboriginal Secondary Grants(*a*)	24,867	32,940
Aboriginal Study Grants(*a*)	13,440	38,960
Aboriginal Study Grants Overseas(*a*)	2	228
Assistance for Isolated Children(*a*)	13,150	22,707
English as a Second Language—		
Living Allowances (*a*)	557	2,108
Loan Video Program	—	1,300
Non-State Tertiary Institutions	—	306

(*a*) Total numbers assisted in the calendar year up to 30 June.

Under AUSTUDY the number of students to be assisted will increase substantially. Almost 238,000 students received AUSTUDY in 1987, compared with an estimated 187,000 under SAS, ASEAS and TEAS in 1986.

Assistance for isolated children has been substantially improved, with rates of allowance and income test levels brought into line with AUSTUDY.

A special allowance was introduced in July 1986 to fill the critical gap in provision for young people unable to live at home because of exceptional and intolerable circumstances. The Young Homeless Allowance gives this group the chance to stay on at school.

Aboriginal and Torres Strait Islander students remain the single most educationally disadvantaged group in Australian education. The government has increased education opportunities for Aboriginals and Torres Strait Islanders by:

- building better school facilities in Aboriginal and Islander communities through the Aboriginal and Torres Strait Islander element of the Commonwealth Capital Grants Program;
- developing support measures for Aboriginal and Torres Strait Islander students in tertiary education, including bridging courses and enclave programs;
- earmarking higher education places for Aboriginal students.

In March 1985 the Government announced changes to Australia's overseas student policy, to extend and improve provision for overseas students.

The policy has three elements:

- Sponsored students, mainly from developing countries, come to Australia as part of Australia's aid effort. These students are fully funded by Australia, through the Australian International Development Assistance Bureau.
- Private overseas students come to Australia to study at both secondary schools and tertiary education. The Australian Government provides subsidised places for some 18,000 overseas students. In higher education these students pay fees equivalent to 45 per cent of the cost of their places. These fees are also payable by private overseas students in schools and TAFE.
- The newest arm of Australia's overseas student policy is the marketing of Australian education for full-fee paying students. The high international reputation of Australian education standards creates the potential to earn significant export income.

Since the Commonwealth Government's 1985 decision to allow higher education institutions to offer full-fee courses, there has been a high degree of interest from overseas in courses offered in Australia or conducted 'off-shore' by Australian education institutions.

Expenditure on education

The aim of this section is to provide information on the extent and direction of both government and private expenditure on education in recent years. The figures have been compiled in accordance with national accounting concepts. For explanation of these concepts, reference should be made to *Australian National Accounts: Concepts, Sources and Methods* (5216.0), *Classification Manual for Government Finance Statistics, Australia* (1217.0) and also to *Commonwealth Government Finance, Australia* (5502.0), and *State and Local Government Finance, Australia* (5504.0), from which figures included in this section have also been taken.

The emphasis given in this section to the outlays of the public sector reflects in part the relative importance of that sector in the provision of education services, but it is also a reflection of the lack of detailed information relating to educational activities in the private sector. Information is given, however, to show the order of magnitude of private sector spending, and also to show aggregate supply of education services and facilities. For more information on the extent and direction of both government and private expenditure on education, reference should be made to *Expenditure on Education, Australia* (5510.0).

Total expenditure on education

Total expenditure on education can be measured by adding together the final expenditures of the public and private sectors.

The figure derived for total expenditure on education can be regarded as a measure of the aggregate supply of education services and facilities and can therefore be related to the supply of goods and services available from domestic production (i.e. gross domestic product). Final consumption expenditure and capital expenditure on education, by sector, can also be related to gross domestic product. These relationships are shown in the following table.

Public sector

The statistics presented here for the public sector relate to those outlays which have been identified as being primarily designed to serve the purposes of 'education', broadly as defined in the United Nations System of National Accounts. Included, therefore, are outlays on administration and regulation of school systems and institutions of higher learning and educational research; on provision, inspection and support of primary and secondary schools, colleges and universities, technical training institutions, schools for the handicapped, adult education facilities, pre-school centres, etc.; on scholarships, etc.; and on subsidiary services such as transportation of school children and fare concessions. Expenditure on school medical and dental services and provision of free milk for school children are not included, as these are regarded as primarily serving the purpose of health.

AUSTRALIA: EXPENDITURE ON EDUCATION

Description	*1979–80*	*1980–81*	*1981–82*	*1982–83*	*1983–84*	*1984–85*
			—$ million—			
Government—						
General government final consumption expenditure	5,209	5,955	6,822	7,653	8,418	9,155
Gross fixed capital expenditure	636	625	617	653	733	849
Increase in stocks	−1	1	−1	1	−3	—
Final expenditure (1)	5,844	6,581	7,438	8,306	9,148	10,004
Personal benefit payments (2)	419	455	478	549	663	742
Grants to non-profit institutions	513	648	788	969	1,073	1,169
Other (3)	17	7	10	13	23	23
Total government outlay on education	6,793	7,691	8,714	9,837	10,907	11,938
Private—						
Private final consumption expenditure	775	941	1,104	(*a*)1,359	(*a*)1,512	(*a*)1,664
Gross fixed capital expenditure	101	137	160	196	177	175
Final expenditure (4)	876	1,078	1,264	1,555	1,689	1,839
Total final expenditure on education (1) + (4)	6,720	7,659	8,702	9,861	10,837	11,843
Total outlay on education (1) + (2) + (3) + (4)	7,156	8,121	9,190	10,423	11,524	12,608
Gross Domestic Product	118,829	135,188	152,756	167,534	189,257	209,775
			—per cent—			
Percentage of Gross Domestic Product—						
Total government outlay as percentage of Gross Domestic Product	5.7	5.7	5.7	5.9	5.8	5.7
Total outlay on education as perentage of Gross Domestic Product	6.0	6.0	6.0	6.2	6.1	6.0
Total final expenditure on education as percentage of Gross Domestic Product	5.7	5.7	5.7	5.9	5.7	5.6
of which						
General government final consumption expenditure	4.4	4.4	4.5	4.6	4.4	4.4
Private final consumption expenditure	0.7	0.7	0.7	0.8	0.8	0.8
Government gross fixed capital expenditure	0.5	0.5	0.4	0.4	0.4	0.4
Private gross fixed capital expenditure	0.1	0.1	0.1	0.1	0.1	0.1

(*a*) Revised since the 1983–84 edition of *Australian National Accounts: National Income and Expenditure* (5204.0) because of revisions to the component series 'current grants from government to non-profit institutions for education'.

Private sector

Final expenditure on education by the private sector consists of private final consumption expenditure on education services, and expenditure on new fixed assets—mainly by private non-profit organisations and financed in part by grants from public authorities for private capital purposes. Private final consumption expenditure on education services is an estimate of fees paid by persons to government schools (mainly technical and agricultural colleges), fees and gifts to universities and school fees (other than boarding fees) paid to non-government schools, business colleges, etc. Expenditure on such items as school books, uniforms, etc., and expenditure by parents associations on school equipment is not included, being treated in the Australian National Accounts as private final consumption expenditure on other goods and services (such as clothing, books, household durables, etc.). Private expenditure on new fixed assets is estimated from statistics of the value of work done on new building and major additions to buildings of private educational institutions.

Commonwealth Government

Details of outlay on education by authorities of the Commonwealth Government are given in the following table.

COMMONWEALTH GOVERNMENT: OUTLAY ON EDUCATION CLASSIFIED BY GOVERNMENT PURPOSE CLASSIFICATION
($ million)

Government purpose classification	*1980–81*	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*
041 Primary and secondary education.	990.3	1,194.1	1,434.6	1,590.2	1,738.6	1,905.7
042 Tertiary education	1,845.9	2,045.6	2,276.3	2,500.6	2,770.5	3,000.0
0421 University education . . .	950.2	1,085.9	1,196.8	1,293.4	1,385.2	1,506.0
0422 Other higher education . .	653.2	682.0	760.4	856.8	930.5	1,044.5
0423 Technical and further education.	229.6	263.1	302.1	326.6	423.4	410.3
0429 Tertiary education, nec . .	12.9	14.5	17.1	23.8	31.4	39.2
043 Pre-school education and education not definable by level	74.5	82.7	89.9	94.9	99.8	89.0
0431 Pre-school education . . .	31.4	33.1	33.5	33.4	33.2	16.7
0432 Special education	..	0.1	0.1	0.1	0.1	0.2
0439 Other education not definable by level	43.1	49.6	56.2	61.3	66.6	72.1
044 Transportation of students .	2.6	3.6	4.1	4.6	5.3	5.4
049 Education, nec	19.5	20.1	17.0	16.5	18.1	12.3
Total outlay on education. .	2,932.8	3,346.2	3,821.8	4,206.8	4,632.3	5,012.5
Total outlay on all purposes	37,893.0	43,562.8	51,069.8	59,402.2	66,804.2	73,865.6
			—per cent—			
Outlay on education as a percentage of total outlay . .	7.7	7.7	7.5	7.1	6.9	6.8

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Colleges of Advanced Education, Australia (4206.0)
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Non-government Schools, Australia (4216.0)
Tertiary Education, Australia (4218.0)
National Schools Statistics Collection, Australia (4221.0)

Financial aspects are dealt with in the annual publications:

Commonwealth Government Finance, Australia (5502.0)
State and Local Government Finance, Australia (5504.0)
Expenditure on Education, Australia (5510.0)
Government Financial Estimates, Australia (5501.0)

Other Publications

Annual publications produced by the Commonwealth Tertiary Education Commission are:

Selected University Statistics
Selected Advanced Education Statistics
Selected TAFE Statistics

Publications produced regularly by the Department of Employment, Education and Training are:

Australian Education Directory
Directory of Higher Education Courses
Directory of Education Research and Researchers in Australia

The annual reports of the respective State education departments also provide detailed statistical information.

CHAPTER ELEVEN

LAW AND ORDER

The law in Australia

Nature and composition

The laws of a country represent the common body of rules, whether proceeding from legislation, executive action, court judgments or custom, that a State or community recognises as binding on its citizens or members, and which are enforceable by judicial means. In Australia, the law consists basically of:

- Acts passed by the Federal Parliament acting within the scope of its powers under the Australian Constitution, together with regulations, rules and orders made under such Acts;
- Acts and Ordinances passed in respect of the Australian Capital Territory and the Northern Territory of Australia, together with regulations, rules and orders made under such Acts and Ordinances;
- Acts passed by State Parliaments and the Legislative Assembly of the Northern Territory, together with regulations, rules and orders made under such Acts;
- so much of the common or statute law of England that still applies to Australia and remains unrepealed;
- the common law, consisting of judicial decisions.

These various laws relate to a number of subject-matters, including constitutional law, criminal law, civil law, family law and industrial law.

Federal and State responsibilities

Under the Australian Constitution, the Commonwealth of Australia is empowered to make laws in relation to certain matters specified in the Constitution, e.g. in relation to trade and commerce, taxation, defence and external affairs. In relation to some of these matters, the powers of the Commonwealth are concurrent with those of the Australian States and Territories in that they may be exercised by either the Commonwealth, the States or the Territories. In relation to some other specified topics the Commonwealth's power is absolute, and in all areas of federal jurisdiction, Commonwealth laws are binding on the Australian States and Territories.

The Australian States and Territories have independent jurisdiction in all matters not otherwise specifically invested in the Commonwealth of Australia, and it is the statute law and the common law of the States and Territories that primarily govern the day-to-day lives of most Australians. With certain exceptions, such as traffic laws, State and Territorial law applies normally only to persons who are residents of the State or Territory concerned and to things located, or events occurring, within such State or Territory.

The common law is uniform throughout Australia although statute law often varies between the States and Territories. However, some of the problems arising from these differences have become recognised over recent years and attempts are now being made, wherever possible, towards the enactment of uniform laws in areas of State and Territory jurisdiction.

Administration

Administration of the law in Australia is undertaken by the responsible government concerned, principally through Federal, State and Territorial police forces, the National Crime Authority, and State and Territorial corrective or penal services. There is no independent federal corrective service, and the relevant State or Territorial agencies provide corrective services for federal offenders.

The various law enforcement agencies involved in the administration of law operate in such a way that the activities of one agency may affect the activities of another, e.g. a criminal offence reported to the police may lead to the arrest, charge and court appearance of the offender, and subsequent provision of corrective (e.g. imprisonment, probation) or welfare services. The agencies involved, and the relationship between them, may vary according to the laws, agencies and types of matters or offenders involved.

Law reform

Reform of the law is undertaken principally through State and Commonwealth Parliaments and Attorneys-General in some instances acting on recommendations provided by State and the Australian Law Reform Commissions, and by State Supreme and Federal courts.

Law Reform Commissions have been established as statutory authorities in all States (except South Australia) to undertake review of State laws, and report findings and recommendations for reform of those laws to State Parliaments and Attorneys-General. (In South Australia, a Law Reform Committee was established by proclamation to perform similar functions in that State.) In addition, in Victoria there is a Chief Justice's Law Reform Committee and a Victorian Legal and Constitutional Committee established under the *Parliamentary Committees (Joint Investigatory Committees) Act 1982*. These agencies have functions to recommend reform of the law. Acceptance of recommendations depends upon governmental and parliamentary reaction to the proposals.

The Australian Law Reform Commission

The Australian Law Reform Commission (ALRC) commenced operations in 1975 under the *Law Reform Commission Act 1973*. The Commission was established to report on the review, simplification and modernisation of those laws concerning matters consigned by the Australian Constitution to the jurisdiction of the Commonwealth Parliament, and to consider proposals for the uniformity of laws of the States and Territories. The Commission is required to make reports to the Attorney-General arising out of such review or consideration, and to make such recommendations as it thinks fit.

The ALRC has assumed the functions formerly undertaken by the A.C.T. Law Reform Commission, and has the responsibility for review of Territorial law operating in the Australian Capital Territory. To assist in this, a branch office has been set up in Canberra.

In undertaking its function the normal procedure of the Commission is as follows. Upon receipt of a reference, the Commission advertises and calls for public submissions in relation to the reference, and prepares consultative papers examining the issues for distribution among groups thought to have a special interest in the subject matter. Public sittings are conducted, and in the light of submissions received, a final report containing draft legislation is prepared for submission to the Attorney-General. The Commission, which consisted of five full-time, and thirteen part-time members at 30 June 1986, makes extensive use of honorary consultants.

To 30 April 1986, the Commission has completed reports on the following references:

- complaints against police and criminal investigation;
- alcohol, drugs and driving;
- consumers in debt;
- defamation;
- sentencing of federal offenders;
- human tissue transplants;
- lands acquisition and compensation;
- insurance intermediaries;
- child welfare;
- insurance contracts;
- privacy;
- evidence;
- standing in public interest litigation;
- community law reform for the Australian Capital Territory;
- domestic violence;
- foreign state immunity.

Legislation following the recommendations contained in these reports has been enacted in some cases. In other cases, the proposals made by the Commission are under consideration by Parliament or the appropriate Commonwealth department. Current references include debt recovery laws; access to court (class actions); Aboriginal customary laws; service and execution of process; Admiralty jurisdiction; contempt of court; general insolvency; matrimonial property and community law; domestic violence; and community law reform in the A.C.T.

Federal courts

The judicial power of the Commonwealth of Australia is vested in the High Court of Australia, in the federal courts created by the Federal Parliament and in the State courts invested by Parliament with federal jurisdiction. The nature and extent of the judicial power of the Commonwealth is prescribed by Chapter III of the Australian Constitution.

High Court of Australia

The Commonwealth of Australia Constitution provides that the judicial power of the Commonwealth should be vested in a 'Federal Supreme Court, to be called the High Court of Australia'. It requires that there shall be a Chief Justice and not less than two other Justices of the High Court. Today there are six other Justices. Originally, Justices were appointed for life. However, following an amendment to the Constitution in 1977, Justices appointed after that date retire at seventy years of age.

The High Court was established in 1903 and was originally based in Melbourne. Since 1980 the principal seat of the High Court has been in Canberra, although the Court continues to visit the States regularly.

The Constitution vests two types of jurisdiction in the High Court: original, under sections 75 and 76, and appellate, under section 73.

Original jurisdiction is conferred by section 38 of the Judiciary Act in respect of:

(a) matters arising directly under any treaty;
(b) suits between States, or between persons suing or being sued on behalf of different States, or between a State and a person suing or being sued on behalf of another State;
(c) suits by the Commonwealth, or any person suing on behalf of the Commonwealth, against a State, or any person suing or being sued on behalf of a State;
(d) suits by a State, or any person suing on behalf of a State, against the Commonwealth or any person being sued on behalf of the Commonwealth;
(e) matters in which a writ of mandamus or prohibition is sought against an officer of the Commonwealth or a federal court. (However, the High Court shares some of its jurisdiction under this section with the Federal Court of Australia.)

The High Court is empowered by section 44 of the Judiciary Act to remit to another court any section 38 matters. In addition, the High Court is the Commonwealth Court of Disputed Returns under section 354 of the *Commonwealth Electoral Act 1918*.

The appellate jurisdiction of the High Court derives from the Judiciary Act, together with the Federal Court and Family Law Acts and permits the High Court to grant leave to appeal from decisions of:

(i) State Supreme Courts;
(ii) State courts exercising federal jurisdiction;
(iii) the Federal Court of Australia; and
(iv) the Family Court of Australia.

In considering whether to grant an application for leave to appeal from a judgment, the High Court may have regard to any matters that it considers relevant but it shall have regard to whether the application before it:

(a) involves a question of law that is of public importance, or upon which there are differences of opinion within, or among, different courts; or
(b) should be considered by the High Court in the interests of the administration of justice.

The High Court is the final court of appeal in Australia.

Appeals to the Privy Council

The jurisdiction which the Privy Council formerly had to hear appeals from decisions of the High Court has, for all practical purposes, disappeared (see *Privy Council (Limitation of Appeals) Act 1968* and *Privy Council (Appeals from the High Court) Act 1975*). A residual right of appeal to the Privy Council from State courts reviewing State jurisdiction was abolished by the *Australia Act 1986*.

Federal Court of Australia

The Federal Court of Australia was created by the *Federal Court of Australia Act 1976* and began to exercise its jurisdiction on 1 February 1977.

The Court consists of the Industrial Division and the General Division. Matters under the *Conciliation and Arbitration Act 1904* are dealt with in the Industrial Division. All other matters are dealt with in the General Division. The Court sits as required in each State and in the Australian Capital Territory and the Northern Territory.

The Court has such original jurisdiction as is invested in it by laws made by the Parliament. Except in cases where a hearing had actually started before 1 February 1977, the jurisdiction formerly exercised by the Federal Court of Bankruptcy and the Australian Industrial Court has been transferred to it. Important jurisdiction in the Court includes matters under the *Administrative Decisions (Judicial Review) Act 1977* and certain matters under the *Trade Practices Act 1974.*

The Federal Court of Australia has been conferred with original jurisdiction, concurrent with that of the High Court with respect to matters in which a writ of mandamus or prohibition or an injunction is sought against an officer of the Commonwealth.

The Federal Court of Australia has appellate jurisdiction over decisions of single judges of the Court, decisions of the Supreme Courts of the Territories (but not the Northern Territory), and certain decisions of State Supreme Courts exercising federal jurisdiction (for example, under the *Income Tax Assessment Act 1936* and the *Patents Act 1952*).

Australian Industrial Court and the Federal Court of Bankruptcy

Matters in which a hearing had begun in the Australian Industrial Court or the Federal Court of Bankruptcy before 1 February 1977 continue to be heard in these Courts. Otherwise, the jurisdiction formerly exercised by these Courts is now vested in the Federal Court of Australia.

Family Law

The *Family Law Act 1975* commenced operation on 5 January 1976. It introduced a new law dealing with the dissolution and nullity of marriage, custody and welfare of the children, maintenance and the settlement of property between the parties to a marriage. The Act also created the Family Court of Australia as a specialist court dealing only with matrimonial and associated proceedings.

The main change made by the Act is that matrimonial conduct and fault are no longer taken into account as grounds for divorce. The Act provides that there is only one ground for divorce—that of irretrievable breakdown of a marriage which is established if the husband and wife have separated and have lived apart from each other for 12 months and there is no reasonable likelihood of reconciliation.

Proceedings under the Family Law Act are dealt with by the Family Court of Australia and by certain other courts in the States and Territories. Except in certain areas of Western Australia, Magistrates' Courts and Courts of Petty Sessions have jurisdiction in all proceedings under the Act except for:

- proceedings for dissolution or nullity of marriage;
- defended proceedings for custody or concerning property worth more than $1,000, unless the parties agree to the matter being heard by a Magistrates' Court or the Court of Petty Sessions.

A State Family Court has been established in Western Australia to deal with family law matters in that State. That Court applies the provisions of the Family Law Act in dealing with matters related to dissolution and nullity, and custody and welfare of children of marriages, and maintenance and property settlements.

Under the Family Law Act, great emphasis is placed on the counselling services available through the Family Courts to persons involved in proceedings and to any persons who have encountered marriage problems or difficulties relating to the resolution of custody and access questions. It is not necessary to start proceedings to make use of these services.

A court exercising jurisdiction under the Family Law Act is required to have regard to the following principles:

- the need to preserve and protect the institution of marriage as the union of a man and a woman to the exclusion of all others voluntarily entered into for life;
- the need to give the widest possible protection and assistance to the family as the natural and fundamental group unit of society, particularly while it is responsible for the care and education of dependent children;
- the need to protect the rights of children and to promote their welfare;
- the means available for assisting parties to a marriage to consider reconciliation or the improvement of their relationship to each other and to the children of the marriage.

In relation to the guardianship and custody of children, the Family Law Act provides that both parties to a marriage have, subject to a court order to the contrary, the joint guardianship and custody of any children of the marriage. However, one parent can ask the Court for sole custody of a child even if no divorce has been sought.

In disputes over custody, a child may be separately represented. The paramount consideration for the Court in the determination of all such disputes is the welfare of the child. However, where a child has reached 14 years of age the Court may not make an order contrary to his or her wishes unless there are special circumstances. In relation to the welfare of children a divorce decree usually will not become effective unless the Court is satisfied that proper arrangements have been made by the parties for the welfare of their children.

Under the Family Law Act, the right of one party of a marriage to receive maintenance from the other is based on the needs of the party seeking it and the ability of the other party to pay. An application for maintenance may be made by either husband or wife, and irrespective of whether the parties intend to divorce.

There are specific matters for the Court to consider when it is dealing with maintenance applications. These include:

- the age and state of health of the parties;
- the income, property and financial resources of each of the parties and their financial obligations;
- whether either party is entitled to a pension or superannuation;
- the length of the marriage and what is an appropriate standard of living for each party;
- whether either party has to care for children;
- the extent to which the marriage has affected the earning capacity of the applicant;
- the possibility of the applicant taking on a training course or further educational course to improve his or her employment prospects.

The Act also provides for the registration and court approval of maintenance agreements made by the parties.

Both parties are liable to maintain their children according to their respective means and the Court is guided by similar considerations in deciding what order to make.

The Court has power to settle disputes about the family assets, including the power to order a transfer of legal interests in property. When dealing with these disputes, the Court considers the interest each party has in the property, the financial and non-financial contributions made by each party during the marriage, and the matters the Court is required to consider in dealing with maintenance applications.

Family Court of Australia

The judges of the Family Court are chosen because of their suitability to deal with matters of family law by reason of their training, experience and personality. They do not wear wigs and gowns. Staff attached to the Court include trained counsellors and legally qualified Registrars and Deputy Registrars.

Proceedings under the Act in the Family Court are heard in private. No publicity about any proceedings under the Act is permitted, unless otherwise directed by the Court. The publication of law court lists and law reports, or other publications of a technical character directed to the legal or medical professions, is exempted from this prohibition.

The Family Court aims to be a 'helping' court. A Principal Director of Court Counselling and a staff of court counsellors are attached to the Court to help parties to a marriage settle their problems. This help is available to parties who are not even contemplating divorce or other proceedings, but who may need counselling assistance. These services complement those already provided by voluntary marriage counselling agencies. People may approach the Court counselling service directly—in person, in writing, by telephone or through a legal practitioner.

State and Territory courts

Australian State and Territory courts have original jurisdiction in all matters brought under State or Territory statute laws, and in matters arising under Federal laws, where such matters have not been specifically reserved to courts of Federal jurisdiction. Most criminal matters, whether arising under Federal, State or Territory law, are dealt with by State and Territory courts.

Each State and Territory court system is organised and operates independently. However, within each system, which comprises both courts of general jurisdiction and specialist courts and tribunals, the courts are organised hierarchically according to the nature of the matters with which they may deal.

Appeals

County and District Courts and State and Territory Supreme Courts have jurisdiction to hear appeals against the decisions of lower courts and some specialist tribunals.

The procedures concerning the right of appeal are laid down by statute in each State and Territory, and appeals may be lodged against matters such as the correctness of the verdict or the severity of the sentence imposed. However, appeals against Supreme Court decisions are heard in most States by a Full Bench of the Supreme Court which usually comprises three judges of the Supreme Court. Appeals from State Supreme Court decisions may be taken to the Federal Court of Australia or the High Court of Australia depending on the nature of the matter involved. Appeals from decisions of Territory Supreme Courts are taken to the Federal Court of Australia or to the High Court if special leave is given by the High Court.

Special courts and tribunals

Each Australian State and Territory administers particular areas of the law through specialist courts or tribunals, such as Small Claims Courts, Licensing Courts, etc. These courts or tribunals deal primarily with civil matters or matters of an administrative nature.

Courts of Marine Inquiry

Matters which come within the jurisdiction of Courts of Marine Inquiry are contained in the *Navigation Act 1912*. The principal areas of jurisdiction are to make inquiries into casualties, all missing ships, or entailing loss of life on or from ships and charges of incompetency or misconduct.

When the Department of Transport and Communications is advised of an incident which may warrant the convening of a Court of Marine Inquiry, the Minister will appoint an officer to conduct a Preliminary Investigation. The officer will conduct interviews with the parties involved and, based on the results of these interviews, advise the Minister as to whether or not the circumstances warrant a request by the Minister for a Court of Marine Inquiry to be convened. The Governor-General, by proclamation, establishes the Court of Marine Inquiry. Findings of the Court are forwarded to the Minister.

Statistics

Information relating to the operation of courts in particular Australian States may be obtained from the respective State *Year Books*.

Administrative bodies

Administrative Appeals Tribunal

The Administrative Appeals Tribunal was established by the *Administrative Appeals Tribunal Act 1975* and came into operation on 1 July 1976. Its President is a judge of the Federal Court of Australia. It is an independent tribunal whose function is to review decisions made by Commonwealth Ministers, authorities and officials under certain laws of the Commonwealth. The Tribunal is able to substitute its own decision in those areas in which it has jurisdiction. The Tribunal has jurisdiction under more than 200 enactments including decisions under the *Social Services Act 1947, Compensation (Commonwealth Government Employees) Act 1971, Migration Act 1958, Customs Act 1901, Export Market Development Act 1974*, the Air Navigation Regulations, the *Freedom of Information Act 1982* and the *Repatriation Act 1920*. Further additions to the Tribunal's jurisdiction are made from time to time.

The Principal Registry is in Canberra and there are Tribunal Registries in each capital city.

The Administrative Review Council was also established by the *Administrative Appeals Tribunal Act 1975*. The principal functions of the Administrative Review Council are to make recommendations to the Attorney-General on rights of review of administrative decisions and on the procedures of administrative tribunals.

Administrative Decisions (Judicial Review) Act

The *Administrative Decisions (Judicial Review) Act 1977*, which came into operation on 1 October 1980, provides for judicial review in the Federal Court of Australia of administrative action taken under Commonwealth legislation. The Court is empowered where an order of review is sought by an aggrieved person to review the lawfulness of a decision, conduct leading up to the making of a decision or circumstances where there has been failure to make a decision. The grounds on which review may be sought and the powers of the Court are set out in the Act. In many cases, a person who is entitled to seek judicial review in respect of an administrative decision may seek a statement of reasons for the decision from the decision-maker.

Commonwealth Ombudsman

The office of the Commonwealth Ombudsman was established by the *Ombudsman Act 1976* and commenced operation in June 1977. Additional responsibilities have been given to the office through the *Complaints (Australian Federal Police) Act 1981*, the *Freedom of Information Amendment Act 1983* and the *Ombudsman Amendment Act 1983*. The Ombudsman is empowered to investigate complaints about the administrative actions of Commonwealth Government departments and prescribed authorities, and complaints about the conduct of members of the Australian Federal Police, and its practices and procedures. Under the *Ombudsman Amendment Act 1983* the Ombudsman is empowered to investigate complaints from members or former members of the Australian Defence Force relating to service in the Defence Force or as a consequence of a person serving or having served in the Defence Force.

The Ombudsman is also empowered to investigate complaints about the actions of agencies in dealing with requests made under the *Freedom of Information Act 1982* and may represent a complainant before the Administrative Appeals Tribunal to seek review of a refusal to give access.

Where the Ombudsman is of the opinion that, after completing an investigation into a complaint, remedial action is required, he reports to the department or authority concerned and may include any recommendations he thinks fit to make. If the department or authority fails to comply with a recommendation contained in his report, the Commonwealth Ombudsman may report to the Prime Minister and to the Federal Parliament. The Central Office of the Commonwealth Ombudsman is located in Canberra and there are regional offices in Sydney, Melbourne, Brisbane, Perth and Adelaide. In Tasmania, the Commonwealth Ombudsman is represented by the Tasmanian Ombudsman and the Northern Territory Ombudsman represents the Northern Territory.

The Human Rights Commission

The Human Rights Commission was set up by the Commonwealth Government in December 1981 to *promote* and *protect* human rights in Australia. The human rights with which it is concerned are those set out in six United Nations instruments:

- The International Covenant on Civil and Political Rights;
- The Declaration of the Rights of the Child;
- The Declaration on the Rights of Mentally Retarded Persons;
- The Declaration on the Rights of Disabled Persons;
- The International Convention on the Elimination of All Forms of Racial Discrimination;
- The Convention on the Elimination of All Forms of Discrimination Against Women.

The Commission works under three Acts—the *Human Rights Commission Act 1981*, the *Racial Discrimination Act 1975*, and the *Sex Discrimination Act 1984*.

Under the Human Rights Commission Act, the functions of the Commission are fourfold:

(i) to review legislation for its consistency with human rights;

(ii) to inquire into, and where practicable effect a settlement of, issues including complaints that have come to its notice;

(iii) to promote understanding, acceptance and public discussion of human rights;

(iv) to undertake and co-ordinate research and educational programs affecting human rights.

Where the Commission considers a change in Commonwealth law or practice is required, it is to report this to the Attorney-General, and its reports must be made public by tabling in Parliament.

Under the Racial Discrimination Act, the Commission is charged with functions in relation to racial discrimination similar to those numbered (ii) to (iv) above in relation to human rights generally.

Under the Sex Discrimination Act, the Commission is charged with functions in relation to sex discrimination similar to those numbered (i) to (iv) above.

Investigation and resolution of complaints made under the Racial Discrimination Act are carried out by the Commissioner for Community Relations on behalf of the Commission.

Complaints made under the Sex Discrimination Act are investigated by the Sex Discrimination Commissioner who endeavours, by conciliation, to reach a settlement of the matter. Complaints which cannot be settled by conciliation can be referred to the Human Rights Commission.

The Racial Discrimination Act applies regardless of whether the discrimination falls within Commonwealth, State or Northern Territory jurisdiction. The human rights function is related to Commonwealth laws and practices under those laws, although the Human Rights Commission Act provides for co-operation with State agencies in the promotion of human rights. The Sex Discrimination Act applies throughout Australia, however, it may not apply to every act of discrimination because of some limitations on Commonwealth powers. In States that have anti-discrimination legislation, people making complaints have a choice of bringing their complaints under either the State Act or the Commonwealth Act; but a complaint can not be made under both Acts.

Freedom of Information Act

The *Freedom of Information Act 1982,* which came into operation on 1 December 1982, has two objectives:

- to make available to the public information about the rules, practices and operations of Commonwealth Government departments and authorities;
- to create a general right of access to documents in the possession of Ministers and agencies.

In order to achieve these objectives the Act defines the rights of members of the public to obtain access to documents, and sets out a range of obligations and restrictions on departments and the public for exercising these rights.

The right of access does not extend to all documents. Exempt are:

- certain documents to which the *Archives Act 1983* applies;
- documents affecting national security, defence, international relations and relations with States;
- Cabinet and Executive Council documents;
- internal working documents (subject to certain limitations on what may be exempt);
- documents affecting enforcement of the law and protection of public safety;
- other documents exempt by reason of secrecy provisions of other enactments, financial or property interests of the Commonwealth, personal privacy, legal professional privilege, etc.;
- documents made available for purchase or open access upon payment of a fee;
- documents created before 1 December 1977.

However, there are two exemptions to this last restriction on access:

- a person has a right of access to documents created before 1 December 1977, necessary to the understanding of a document already legally in that person's possession;
- individuals have the right of access to documents which pre-date the commencement of the Act by up to five years, providing that the documents relate to the individual.

The public is not required to provide reasons for requesting access to documents. However, all requests under the Act should be in writing and provide such information concerning the document as is reasonably necessary to enable a responsible officer to identify the document. Where a person wishes to make a request, or has made a request that does not comply with the provisions of the Act relating to requests for access, it is the duty of the agency to take reasonable steps to assist the person to make the request in a manner that complies with the Act.

Provisions exist whereby a person may apply to have an amendment made to information relating to that person's own personal affairs

The Act contains extensive provisions for review of decisions made under the Act, including review by the Administrative Appeals Tribunal and the Commonwealth Ombudsman.

Royal Commissions—Commonwealth

Australian Governments have from time to time established Royal Commissions to inquire into, and report on, matters of public concern.

A Royal Commission is established by the Governor-General, on the advice of the government, issuing a commission to a person or persons to inquire into and report on specified matters. At the end of its inquiry, a Royal Commission presents its report to the Governor-General for consideration by the government.

The power to issue Letters Patent to inquire is a prerogative of the Crown. The *Royal Commissions Act 1902* confers powers on a Royal Commission to compel the attendance of persons, the giving of evidence, and the production of papers. It also creates a number of offences (e.g. failure to attend a Royal Commission when summoned, or failure to produce papers) and gives some protection to Commissioners and witnesses against legal liability. The constitutional foundation of the Royal Commissions Act is section 51 (xxxix) of the Constitution, which provides that the Commonwealth Parliament may make laws with respect to 'matters incidental to the execution of any power vested by this Constitution in the Parliament or in either House thereof, or in the Government of the Commonwealth, or in the Federal Judicature, or in any department or officer of the Commonwealth'.

LETTERS PATENT ISSUED FROM 1.7.82 TO 30.6.86

Name of Royal Commission	*Commissioner(s)*	*Date of issue of Letters Patent*
Royal Commission on the Use and Effects of Chemical Agents on Australian Personnel in Vietnam	THE HON. MR JUSTICE P. G. EVATT, D.S.C.	13 May 1983
Royal Commission on Australia's Security and Intelligence Agencies	THE HON. MR JUSTICE R. M. HOPE, C.M.G.	17 May 1983
Commission of Inquiry into Compensation Arising from Social Security Conspiracy Prosecutions	THE HON. DAME ROMA MITCHELL, D.B.E.	9 February 1984
Royal Commission into British Nuclear Tests in Australia Between 1952 and 1963	THE HON. J. R. MCCLELLAND MRS J. FITCH DR W. J. A. JONAS	16 July 1984

FINAL ROYAL COMMISSION REPORTS PRESENTED FROM 1.7.84 TO 30.6.86

Name of Royal Commission	*Date of presentation*	*Tabled in Parliament*
Royal Commission on the Activities of the Federated Ship Painters and Dockers' Union	26 October 1984	22 February 1985
Royal Commission on Australia's Security and Intelligence Agencies	20 December 1984	22 May 1985
Royal Comission of Inquiry into the Activities of the Nugan Hand Group	4 July 1985	27 November 1985
Royal Commission on the Use and Effects of Chemical Agents on Australian Personnel in Vietnam	31 July 1985	22 August 1985
Royal Commission into British Nuclear Tests in Australia between 1952 and 1963	20 November 1985	5 December 1985
Royal Commission of Inquiry into Alleged Telephone Interceptions	30 April 1986	1 May 1986
Commission of Inquiry into Compensation Arising from Social Security Conspiracy Prosecutions	30 April 1986	10 June 1986

Consumer affairs

The Commonwealth involvement in consumer affairs derives substantially from the *Trade Practices Act 1974*. The Attorney-General has responsibility for Part V (Consumer Protection) of the Act which deals with unfair practices, provides private law rights against sellers, manufacturers and importers, and provides for product safety (including provision for the banning and/or recall of goods considered to be unsafe) and information standards.

The function of the Office of Consumer Affairs located in the Attorney-General's Department is to advise the Minister on matters such as the operation of Part V and related provisions of the Act (including advice on proposed private prosecutions), the banning and/or recall of unsafe goods under the Act, the development of product safety and information standards under the Act, the development of voluntary product recall codes, uniform legislation proposals, the development of consumer education programs, the operation of a national consumer complaints statistics system, and on other developments in the economy affecting consumers. The National Consumers Affairs Advisory Council provides independent advice to the Minister on consumer affairs issues. The members of this Council have backgrounds in consumer affairs, industries, trade unions and government.

The Trade Practices Commission is generally responsible for the administration and enforcement of the Trade Practices Act, except for the role of the Office of Consumer Affairs as indicated above. It receives complaints from consumers but is primarily concerned with issues of national significance. The activities of the Trade Practices Commission are distinct from those of State and Territory consumer affairs agencies which administer their own legislation and provide the principal consumer complaint handling mechanisms.

Co-ordination of consumer affairs activities is undertaken by the Standing Committee of Consumer Affairs Ministers and through meetings of Officers of Consumer Affairs. There is also a Commonwealth/State Consumer Products Advisory Committee to provide a co-ordinated approach to product safety and information matters.

In addition to this, the Australian Federation of Consumer Organisations (AFCO) receives an annual grant under the Commonwealth's Grant-in-Aid Scheme. AFCO comprises a membership of 60 consumer and community groups and was set up with Commonwealth sponsorships to represent the consumer view to all levels of government and industry.

Legal aid

The purpose of providing legal aid is to ensure that no person involved in a legal dispute or action should be without legal assistance by reason of not being able to pay for it, and is based on the notion of justice and equity before the law.

Legal aid in Australia is delivered through a variety of schemes operated at Federal, State and local levels. The principal schemes are those of the Australian Legal Aid Office, the legal aid commissions (which operate in five States and the Australian Capital Territory) and the Aboriginal legal services. In addition there are numerous community based legal aid agencies and certain law society schemes.

Historically, legal aid schemes in Australia were initiated by State governments with Public Solicitor or Public Defender schemes in Queensland, Victoria and New South Wales. The Law Society in South Australia began a legal assistance scheme in 1933, and law society schemes followed in other States. In 1973, the Australian Legal Aid Office was established to provide legal assistance in the Commonwealth area.

It is now the policy of the Commonwealth Government that legal aid other than that given by Aboriginal legal services and voluntary and community agencies be provided in each State and Territory through a single independent statutory commission, established by State or Territory legislation. Under this policy, legal aid is provided by both salaried and private lawyers and funded by the Commonwealth in Federal matters. The States continue to fund legal assistance provided in relation to State matters. Pursuant to agreements entered into between the Commonwealth and the States, independent statutory commissions providing legal advice and assistance in both Commonwealth and State matters have been established in Queensland, South Australia, Victoria, Western Australia and the Australian Capital Territory. A statutory commission has also been established in New South Wales, but its functions do not extend to Commonwealth matters. Legal aid commissions have not yet been established in Tasmania and the Northern Territory, and in these places, as well as New South Wales, the Australian Legal Aid Office continues to provide legal advice and assistance in Commonwealth matters.

Aboriginal legal services operate in all States and Territories and are funded by the Department of Aboriginal Affairs. Community law centres which also operate in all States and the A.C.T. are funded by Commonwealth, State, and in some instances, local government.

The Commonwealth Attorney-General administers a growing area of legal assistance in special Federal areas outside the scheme of independent statutory commissions. This assistance is provided under various Commonwealth Acts (such as the *Conciliation and Arbitration Act 1904, Administrative Appeals Tribunal Act 1975* and the *Trade Practices Act 1974*) and administrative schemes (e.g. aid for Public Interest and Test Cases and for cases involving the recovery of children removed overseas).

Selected details of the income and expenditure of major Australian Legal Aid schemes and further information on the operation of these schemes are available from Annual Reports of the former Commonwealth Legal Aid Council and the Commonwealth Attorney-General's Department.

The police

The primary duties of the police are the prevention and detection of crime, the protection of life and property, and the enforcement of law to maintain peace and good order. In addition, they may perform a variety of other duties in the service of the State, including the regulation of street traffic, acting as clerks of petty sessions, crown land bailiffs, foresters, mining wardens and inspectors under the Fisheries and various other Acts. With the exception of the Australian Federal Police, police forces in Australia are under the control of the State and Northern Territory Governments, but their members perform certain functions for the Commonwealth Government, such as registration of aliens, and in conjunction with the Australian Federal Police and other Commonwealth officers, they police various Commonwealth Acts and Regulations.

The Australian Federal Police was formed in October 1979 and has its headquarters in Canberra, with regional offices in each capital city and in a number of provincial towns and cities.

Australian Federal Police—AFP

The AFP is responsible for many types of law enforcement under Commonwealth law. This includes investigations of organised crime, illegal importation of drugs, corporate crime, frauds committed on the Commonwealth (for example, social security fraud), investigation of other criminal offences committed against the Commonwealth, terrorism and breaches of currency regulations, as well as safeguarding the interests of the Commonwealth.

In the Australian Capital Territory, the AFP provides a full range of general policing services, including traffic control, special operations, search and rescue services and conventional crime investigations.

In 1984 the AFP assumed responsibility for the direction and co-ordination of Australia's coastal surveillance, response and enforcement. The Coastal Protection Unit has its Headquarters in Canberra, with regional offices in Broome, Darwin and Cairns.

The AFP also posts officers for duty overseas. Officers are located in liaison posts in Bangkok, Hong Kong, Interpol in Paris, Islamabad, Jakarta, Kuala Lumpur, London, Los Angeles, Manila, Singapore, Washington and Wellington. These liaison officers play a vital role in gathering and exchanging information. The Australian National Central Bureau of the International Police Organisation (ICPO—Interpol) in Australia is staffed by AFP officers as a service to all Australian law enforcement agencies. The AFP also has a contingent based in Cyprus as a component of the United Nations Peace-keeping Force, and officers serve as members of the Police Forces of the Australian Territories of Christmas Island and Norfolk Island.

Police strengths

The active strengths of non-civilian police personnel in police forces in Australia are shown in the following table:

POLICE FORCES

Year	*AFP*	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*
At 30 June—								
1984	2,911	10,432	8,507	4,686	3,286	2,888	1,009	640
1985	(*a*)2,477	10,608	8,444	4,775	3,373	2,890	1,019	662
1986	2,568	10,743	8,732	4,872	3,492	3,168	1,025	669

(*a*) Protective services units established separately from AFP.

Crime statistics

Selected offences

Since 1964, the ABS has published a series of 'Selected Offences reported or becoming known to Police'. This series is provided by police, and is based as far as possible on definitions and procedural arrangements agreed to by police authorities for all States and Territories.

Graphs following show the number of offences reported or becoming known to police, including the Australian Federal Police, in Australia.

Drug offences

Australia ratified the Single Convention on Narcotic Drugs 1961 in December 1967, and the Protocol Amending the Single Convention on Narcotic Drugs on 22 December 1972. Australia is also a signatory to the Convention on Psychotropic Substances 1971.

As its name implies, the Single Convention of Narcotic Drugs covers only the so-called narcotic drugs including cannabis and its derivatives. The Convention on Psychotropic Substances recognises that there are other drugs of dependence, and imposes controls on substances such as hallucinogens, amphetamines, barbituates, tranquilisers, and a number of other sedatives and central nervous system stimulants.

Overall responsibility for law enforcement in Australia is shared between Federal, State and the Northern Territory police forces. Each police force is an independent organisation with jurisdiction over laws of its State or Territory. Each has a drug squad or squads staffed by selected officers with special training and ability to understand the complexities of drug abuse and drug trafficking. Drug laws incorporate the controls and penalties for offences required by international drug conventions. There is co-operation between Federal, State and Territory Governments, the various police forces and other agencies to combat the serious and growing threat posed by drug trafficking. The Australian Customs Service has responsibility for the enforcement of laws controlling the illicit importing and exporting of drugs.

The following table provides information about selected drug seizures by Federal agencies during the period from 1980 to 1985.

SELECTED DRUG SEIZURES BY FEDERAL AGENCIES

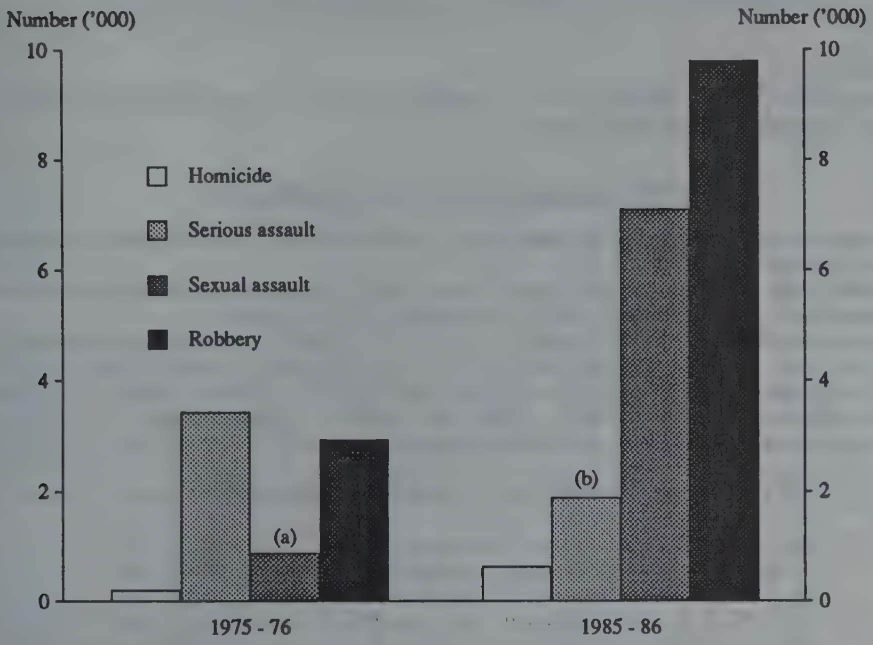
Types of drug (grams)	*1980*	*1981*	*1982*	*1983*	*1984*	*1985*
Opium	42.80	168.20	81.87	1,129.50	40.00	760.00
Heroin	7,900.22	9,543.32	32,014.40	97,071.65	101,550.00	57,886.00
Cocaine	6,964.20	310.80	8,924.87	8,797.49	13,100.00	12,801.00
Cannabis—all types(*a*)	689,288.75	1,731,675.30	2,530,066.37	1,725,455.28	6,912,860.00	3,129,588.00

(*a*) Excludes seizures of plants.

In April 1985 the Commonwealth, State and Territory Governments agreed that a National Campaign Against Drug Abuse should be launched as a co-operative effort, and that all Governments would devote additional resources to the task. It was accepted that the campaign would focus particularly on the problems associated with illicit drugs. At the same time it was recognised that there are widespread health and social problems arising from the abuse of licit drugs, and that the campaign would need to cover these as well.

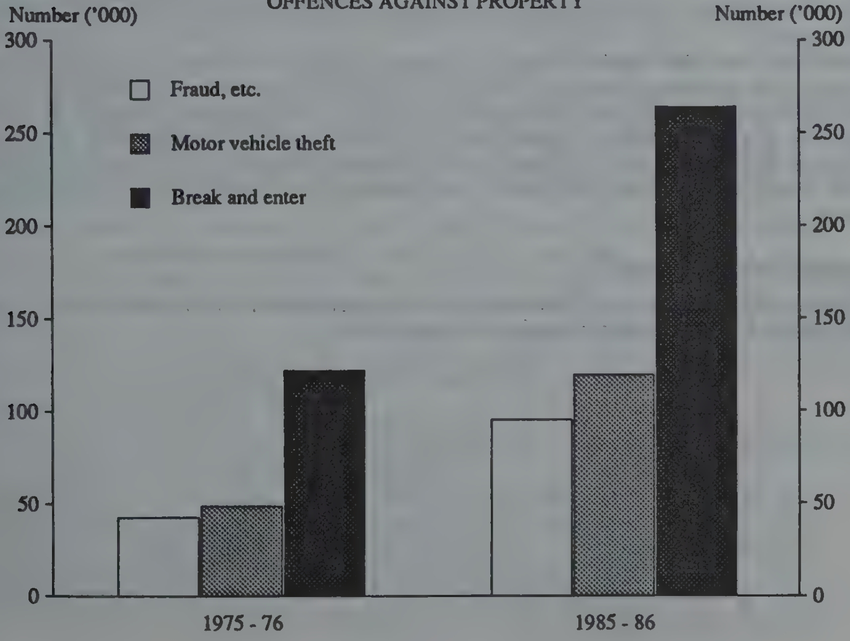
SELECTED OFFENCES REPORTED AND BECOMING KNOWN TO POLICE

OFFENCES AGAINST THE PERSON INCLUDING ROBBERY



(a) From 1985-86 includes all sexual assaults and therefore not comparable with data for 1975-76 which include rape only.
(b) From 1985-86 includes only assaults causing grievous bodily harm.

OFFENCES AGAINST PROPERTY



Crime victims

In 1983, the ABS conducted a survey of crime victims throughout Australia. The main results were published in a special article in *Year Book* No. 70, pages 240 to 243.

Courts

The ABS in most States and the Australian Capital Territory publishes statistics of criminal matters finalised in the courts.

Correctional treatment of offenders

The term 'corrections' (and its derivatives) as used here refers to the treatment of offenders within the justice system.

While there is a variety in the types of correctional activities employed in each State and Territory, such activities can be broadly categorised into two groups:

- non-continuing forms of treatment, where, if the offender meets the requirements set by court, then correctional agencies would not normally become actively involved. Examples of these forms of treatment are fines, bonds, recognisances without supervision.
- continuing forms of treatment, where the offender is subject to some form of control by a correctional agency, usually for a specified period. This control may take the form of:
  - (i) full time custody, as in the case of persons detained in prisons, or other institutions, or
  - (ii) non-custodial treatment involving conditions to be observed by the offender, e.g. probation and parole. In recent years there has been a trend towards the greater use by courts of non-custodial treatment of offenders. This has seen the development of a range of programs such as periodic/weekend detention, attendance centre programs, and community service, under which the offender is at liberty in the community, but is required to report for weekend detention, training, counselling, or to perform unpaid work in the community.

Separate provisions exist in each State and Territory for the treatment of juvenile offenders, and courts and correctional agencies have a wide choice in the types of correctional treatments available to them. Both custodial and non-custodial correctional activities are employed, but greater flexibility allows treatment to be more closely aligned to individual requirements.

Each State and the Northern Territory operate prisons and other correctional services. Convicted adult prisoners from the Australian Capital Territory serve their sentences in New South Wales prisons, but local provision is made for the short-term custody of remand prisoners, and for probation and parole services. The Federal Government does not operate any prisons or other correctional services, and Federal offenders (i.e. persons convicted of offences under Federal laws) fall within the jurisdiction of State agencies for correctional purposes.

National Prison Census

The Australian Institute of Criminology, in conjunction with State prison administrators, conducted the National Prison Census at 30 June 1985.

NUMBER OF PRISONERS BY JURISDICTION, AGE(*a*) AND SEX, 30 JUNE 1985

(*Source:* Australian Institute of Criminology. *Australian Prisoners 1985*. John Walker and David Biles)

Age-group	*N.S.W.*	*Vic.*	*Qld*	*W.A.*	*S.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Total*
Under 16 years	1	..	..	..	..	..	2	..	3
16 years	1	..	1	..	..	1	6	..	9
17 years	49	22	39	9	..	9	10	..	138
18 years	153	42	73	49	25	15	32	..	389
19 years	212	66	104	95	54	13	23	..	567
20–24 years	1,167	515	546	467	244	61	102	3	3,105
25–29 years	1,031	458	425	354	171	41	69	6	2,555
30–34 years	633	321	281	234	122	33	42	2	1,668
35–39 years	372	192	211	138	71	21	16	..	1,021
40–44 years	229	126	140	68	33	15	17	..	628
45–49 years	129	54	82	44	25	5	10	..	349
50–54 years	70	45	36	22	15	6	2	..	196
55–59 years	36	20	27	10	12	1	2	..	108
60–64 years	16	11	20	4	3	4	1	..	59
65 years and over . . .	9	7	10	1	4	3	..	..	34
Unknown	7	..	4	..	4	..	..	..	15
Total persons	**4,115**	**1,879**	**1,999**	**1,495**	**783**	**228**	**334**	**11**	**10,844**
Total males	*3,907*	*1,791*	*1,921*	*1,424*	*743*	*221*	*325*	*10*	*10,342*
Total females	*208*	*88*	*78*	*71*	*40*	*7*	*9*	*1*	*502*

(*a*) The tabulation shows the age-structure of the prison populations as at 30 June 1985. The age at which persons normally become liable to imprisonment in an adult prison varies from State to State, being seventeen years in Victoria, Queensland, Tasmania and Northern Territory, and eighteen years in other jurisdictions, although younger persons who have been convicted of a particularly serious offence may also be sent to adult prisons. Persons in juvenile institutions were specifically excluded from this census.

Criminological research

The Australian Institute of Criminology

The Australian Institute of Criminology, located in Canberra, was established as a statutory authority under the *Criminology Research Act 1971*. The Institute is administered by a Director and a Board of Management comprising three members appointed by the Federal Attorney-General, and three members representing the States, who are appointed by the Criminology Research Council.

Among the functions of the Institute, as defined in the Criminology Research Act, are to:

- conduct criminological research (i.e. research in connection with the causes, prevention and correction of criminal behaviour and related matters), and communicate the results of such research to the Commonwealth and States;
- advise on the needs for, and programs of, criminological research, and give advice and assistance in relation to any research funded through the Criminology Research Council;
- conduct seminars and courses of training and instruction for persons engaged in criminological research or work related to the prevention or correction of criminal behaviour;
- provide advice in relation to the compilation of statistics in relation to crime;
- publish material resulting from, or relating to, its activities.

Since its inception, the Institute has undertaken directly, or through the Criminology Research Council, actively assisted in and advised on an extensive range of criminological research projects. The Institute has conducted, or been represented at, numerous national and international conferences dealing with crime related matters. In addition, the Institute maintains a comprehensive library of criminological material which is available to researchers and criminal justice practitioners.

Major recent publications of the Institute include:

- *Australian Discussion Papers for the Seventh United Nations Congress on the Prevention of Crime and Treatment of Offenders*;
- *Current Sources of Australian Criminal Justice Statistics* by Debbie Neuhaus;
- *Police Source Book*, 2nd edn, by Bruce Swanton and Garry Hannigan;
- *Burglary: A Social Reality* by Satyanshur Mukerjee and Leona Jorgensen;
- *Australian Prisoners 1985* by John Walker and David Biles;
- *Of Manners Gentle* by Dr Peter Grabosky and Dr John Braithwaite;
- *Sentencing for Break, Enter and Steal in New South Wales* by Ivan Potas.

The Criminology Research Council

The Criminology Research Council, comprising representatives from the Commonwealth and each State, is an independent body corporate also established under the *Criminology Research Act 1971*. The Council is responsible for the control and administration of the Criminology Research Fund, which is funded fifty per cent by the Federal Government, and fifty per cent by State governments on a pro-rata population basis. Subject to the Council's assessment of a project, persons seeking to conduct criminological or related research may be provided with a grant from the fund.

Since its establishment, the Council has provided grants for over 100 separate research projects covering nearly all aspects of crime and criminal justice in Australia. Council-funded research is generally located in specific regions and may involve primary data gathering. By contrast, the research undertaken by the Institute itself is generally national and comparative in nature and makes use of existing data sources.

Bankruptcy and copyright

Bankruptcy

Particulars of bankruptcy in each State to the end of 1927 were incorporated in issues of the *Year Book* before No. 23. On 1 August 1928, the first Bankruptcy Act of the Commonwealth came into operation. This Act as amended was repealed by the *Bankruptcy Act 1966* which came into operation on 4 March 1968.

Under the Bankruptcy Act, the Commonwealth is divided into nine Bankruptcy Districts, of which three are in Queensland, and the remainder coincide with the boundaries of the States and of the Northern Territory of Australia. The State of New South Wales and the Australian Capital Territory together constitute one district.

The Federal Court of Australia, and a number of State courts and the Supreme Court of the Northern Territory, are all invested with jurisdiction in bankruptcy. In practice, the Federal Court exercises bankruptcy jurisdiction in the districts of New South Wales and the Australian Capital Territory, Victoria, South Australia, Western Australia, and the Southern District of Queensland. In the Central and Northern Districts of Queensland, and in Tasmania and the Northern Territory, the jurisdiction is exercised by the respective Supreme Court of the State or Territory.

Any debtor unable to pay his or her debts may present to a Registrar in Bankruptcy a petition against himself or herself accompanied by a statement of affairs. Upon their acceptance by the Registrar the debtor becomes a bankrupt. A creditor may apply for a compulsory sequestration if the debtor has committed an act of bankruptcy. The act of bankruptcy usually relied on is that the debtor has failed to comply with the requirements of a bankruptcy notice issued in respect of a debt due under a judgment or order. The prescribed form of bankruptcy notice requires the debtor, within a specified time, to pay the amount of the debt due under the judgment or order, secure payment of the debt, or compound the debt. If an act of bankruptcy is committed, a creditor may thereupon present a petition against a debtor, provided that the debt or debts amount to not less than $1,500, the act of bankruptcy relied on has occurred within six months preceding the presentation of the petition, and the statutory requirements relating to presence or residence in Australia are applicable to the debtor.

When a debtor becomes a bankrupt, the property of the bankrupt vests forthwith in the trustee. (Certain property, known as non-divisible property, does not so vest and is retained by the bankrupt. This non-divisible property comprises items such as personal and necessary household effects, tools of trade and the like to a prescribed value, the proceeds of a claim for damages for personal injury, and the like.) Any divisible property acquired by the bankrupt during the period of bankruptcy vests in the trustee as soon as it is acquired by the bankrupt. No creditor may enforce, in respect of a debt provable in bankruptcy, any remedy against the person or property of the bankrupt, or, except with the leave of the Court, commence any legal proceedings or take any fresh step in such a proceeding.

Part X of the Act enables a debtor and his or her creditors to enter into arrangements without having a sequestration order made against the debtor. These arrangements may take the form of a composition, a deed of assignment, or a deed of arrangement. A debtor who desires that his or her affairs be dealt with under this Part may authorise a solicitor or a registered trustee in bankruptcy to call a meeting of creditors.

The Act provides for an Inspector-General in Bankruptcy who has a range of statutory functions under the Act. In particular, the Inspector-General shall carry out inquiries and investigations at the direction of the Minister, and such other inquiries and investigations as the Inspector-General thinks fit. The Act also provides for a Registrar in Bankruptcy to be appointed for each Bankruptcy District, and for so many Deputy Registrars in Bankruptcy as are necessary. Each Registrar and Deputy Registrar has such powers and functions as are conferred or imposed on a Registrar by the Act. Powers and functions of an administrative nature are exercisable by the court as the court directs or authorises the Registrar to exercise. The Registrar may examine a bankrupt, the spouse of a bankrupt, and a person indebted to a bankrupt or having in his or her possession any of the estate or effects of a bankrupt.

There is an Official Receiver for each District and the Official Receivers together constitute a body corporate known as the 'Official Trustee in Bankruptcy'. The Official Trustee is the trustee in bankruptcy in approximately 80 per cent of the bankrupt estates occurring each year. In the remaining 20 per cent the trustee is a registered trustee in bankruptcy from the private sector.

The Bankruptcy Act was amended in 1985 by the *Bankruptcy Amendment Act 1985* which commenced operation in May 1986. As a result it became optional on the part of the petitioner, whether a petitioning creditor or petitioning debtor, to obtain the consent of a registered trustee to act as trustee of the bankruptcy. In the event that the consent of a registered trustee is not obtained then the Official Trustee becomes the trustee.

The duties of the trustee are to realize and administer the property of the bankrupt and to distribute the proceeds, in accordance with the Act, amongst those creditors who have proved their debts to the trustee. Also the trustee has a discretion to conduct an investigation into the conduct, dealings and transactions of a bankrupt, and the cause of bankruptcy.

Comprehensive statistics on bankruptcy are included in the Annual Report on the Operation of the *Bankruptcy Act 1966* which is laid before each House of Parliament by the Minister pursuant to section 314 of the Act.

Copyright

Copyright is regulated by the Commonwealth *Copyright Act 1968* which came into force on 1 May 1969. The Act does not contain any provisions requiring or enabling the completion of formalities (such as publication, registration or the payment of fees) in order to obtain copyright protection in Australia. Protection is granted automatically from the moment of making a work or other subject matter.

The Act has been amended from time to time. The *Copyright Amendment Act 1980* and the *Statute Law (Miscellaneous Provisions) Act (No. 2) 1984*, in particular, contain substantial changes in a number of areas including fair dealings, copying by libraries and archives, and copying for educational purposes and for handicapped readers.

Copyright is administered by the Attorney-General's Department.

The *Copyright Amendment Act 1984* makes specific provision for copyright in computer software.

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CHAPTER TWELVE

CULTURE, RECREATION, ENVIRONMENT AND TOURISM

Culture is a repository of activities drawing on a shared sense of quality of life, and takes many forms. At a national level these forms range across cultural heritage, creative and performing arts, film and video, radio and television, sports and games, and activities around the conservation and enjoyment of the natural environment.

Tourism is closely bound to cultural life. Cultural venues and events attract visitors; events and institutions are linked both to tourist patronage and to support from local populations, while a general perception of cultural vitality is an important factor in drawing visits from overseas.

This chapter reviews cultural activity supported by the Commonwealth and its agencies, and by national non-government cultural agencies.

Statistics on public participation in environment and travel, and on tourism, complementing the monitoring and promoting role of government, are also included.

CULTURAL HERITAGE

Australia's heritage is drawn from cultural environments, both built and natural, in all their aspects. The built environment includes Aboriginal sites of all types—from cave paintings to fish-traps and carved trees. Historic places such as old residential and commercial buildings, shipwrecks, parks and gardens are also included. Natural environments range from national parks, nature reserves, habitats of endangered species and wilderness areas, to outstanding geological features and landscapes. Sites and objects of scientific, archaeological and social importance are a further component.

The functions of identifying, cataloguing, surveying and conserving national heritage are shared between governments and statutory authorities, with assistance from community organisations, such as the national trusts in each State, and individuals.

Consolidated statistics relating to cultural heritage are not available, although information on discrete activity by individual organisations is published in various annual reports and, for broader sectors, through the reports of special inquiries.

An inventory of national heritage encompasses monuments, assemblages, sites and objects, all of which have been recognised for their intrinsic value to the nation. Provision is made for their conservation in collections, parks, through preservation orders, as built monuments, structures or landscapes.

Governments support delineation and conservation of heritage material through the funding of public collections, the establishment of statutory authorities charged with providing policy advice and undertaking or sponsoring research, and administration of grants in support of heritage related activity.

While the Commonwealth Government works in partnership with State and Territory governments, it also undertakes heritage activities on its own account where implications of these actions go beyond State or local boundaries; for example the nomination of sites for world heritage listing, and the protection of Aboriginal heritage. The former function is administered by the Department of the Arts, Sport, the Environment, Tourism and Territories, the latter by the Department of Aboriginal Affairs.

Aboriginal heritage protection

Act No. 83 of 1986 which received Royal Assent on 24 June 1986, repealed the interim provisions of the *Aboriginal and Torres Strait Islander Heritage (Interim Protection) Act 1984*. The now permanent legislation provides protection for significant Aboriginal areas and objects under threat of injury or desecration. Applications for protection may be lodged by or on behalf of Aboriginals. Protection via a declaration may be provided where State or Territory legislation is ineffective or unavailable.

On request from the Victorian Government, the Commonwealth Government further amended the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* by incorporating provisions for the preservation of Aboriginal cultural heritage in Victoria. The amending legislation was proclaimed on 10 July 1987.

Aboriginal Land Rights (Northern Territory) Act

The *Aboriginal Land Rights (Northern Territory) Act 1976* came into operation on Australia Day 1977. The Act gives recognition to Aboriginal land rights in the Northern Territory and is based on the recommendations of the second report of the Aboriginal Land Rights Commission.

The Act, which was extensively amended in 1987, provides for:

- creation of Aboriginal Land Trusts to hold title to Aboriginal land;
- grant to Land Trusts of inalienable freehold title to Northern Territory Aboriginal reserves and some other land described in Schedule 1 of the Act (about 19% of the Northern Territory);
- investigation and report by Aboriginal Land Commissioners on Aboriginal claims to unalienated Crown land and some other land made on the basis of traditional ownership by which to date some 14 per cent of the Northern Territory has been successfully claimed;
- establishment, under the Act, of Aboriginal Land Councils to act as agents for traditional Aboriginal owners (currently the Central Land Council, Northern Land Council and Tiwi Land Council);
- control, by traditional Aboriginal owners, of mining and other use of their land;
- negotiations by the Land Councils of terms and conditions of any exploration or mining within specified time limits;
- royalty equivalents from mining operations on Aboriginal land to be paid to the Aboriginals Benefit Trust Account (ABTA). Thirty per cent is distributed to communities within the area affected and 40 per cent is paid to Land Councils to meet their administrative costs. The remaining 30 per cent is available to meet administrative costs of the ABTA and supplementary payments to the Land Councils. All royalties are to be applied for the benefit of Aboriginals living in the Northern Territory.

Land grant in the Australian Capital Territory

The *Aboriginal Land Grant (Jervis Bay Territory) Act 1986*, which came into effect on 15 January 1987, provided for the granting of inalienable freehold title over 403 hectares of land in Jervis Bay Territory to the Wreck Bay Aboriginal Community Council. The Instrument of Grant was handed to the community by the Minister for Aboriginal Affairs at a ceremony on 14 March 1987.

Victorian land grants

In Victoria, proposed legislation for granting land at Framlingham Forest and Lake Condah to Aboriginals was prevented from passage through the State Parliament in late 1986. The Commonwealth Government agreed to a request from the Victorian Government for legislation to be introduced into the Federal Parliament to give effect to the Victorian Aboriginal Land Bills. Subsequently, that Parliament enacted the *Aboriginal Land (Lake Condah and Framlingham Forest) Act 1987*, which received Royal Assent on 2 June 1987. This resulted in the granting of 53 hectares of land at Lake Condah and 1,100 hectares of land at Framlingham Forest to the traditional Aboriginal owners.

Uluru (Ayers Rock-Mount Olga) National Park (Northern Territory)

On 26 October 1985 the Governor-General signed documents granting freehold title in Uluru (Ayers Rock-Mount Olga) National Park to an Aboriginal land trust representing the traditional Aboriginal owners. In accordance with the agreement leading to the grant, the traditional owners leased back the land to the Director of the Australian National Parks and Wildlife Service who maintains it as a national park. A Board with an Aboriginal majority has been established which, in conjunction with the Director, oversees the management of the Park and the preparation of plans of management.

The Park was nominated for world heritage listing by the Commonwealth Government with the support of the Northern Territory Government on 31 December 1986. In June 1987, the Bureau of the World Heritage Committee recommended that the Park be inscribed on the World Heritage List.

National estate

The Commonwealth Government, in conjunction with States and Territories, actively seeks the protection of Australia's national estate.

National Estate Grants Program

The program is designed to help the States and Territories, and organisations within them, to conserve national estate. It is a Commonwealth Constitution 'Section 96' scheme operated under the provisions of the *Urban and Regional Development (Financial Assistance) Act 1974* and under agreements between the Commonwealth and each State and the Northern Territory.

The program is co-ordinated by the Department of the Arts, Sport, the Environment, Tourism and Territories in liaison with State and Territory authorities and the Australian Heritage Commission.

Under current arrangements, State and Territory governments have the primary responsibility for developing and administering their respective programs.

Project work is carried out by State and Territory government departments and authorities, local government bodies, academic institutions, national trusts, professional and community organisations as well as by individual consultant firms working for them.

Australian Heritage Commission

For details on the Australian Heritage Commission and the World Heritage List, see the special article on page 488.

National trusts

The national trust bodies were set up to further the conservation of lands, buildings, works and articles which are of heritage importance because of educational, aesthetic, historic, architectural, artistic, scientific, cultural or other special interests.

The first trust, the National Trust of Australia (New South Wales), was formed in 1945. Since then, trusts have been formed in each State, the Northern Territory and the Australian Capital Territory.

Membership of the national trusts is open to all individuals and organisations. Total membership throughout Australia is approximately 80,000.

About 300 properties are owned or controlled by the trusts. These properties include houses, nature reserves, gardens, two paddle steamers and an iron barque, an historic hamlet, and buildings which were formerly a telegraph station, a stock exchange, a powder magazine, a market, an inn, a police station, a court house, a gaol and a joss house.

The various trusts have established heritage registers which collectively list more than 23,000 places throughout Australia including buildings, urban areas, landscapes and industrial sites.

Historic shipwrecks

Around Australia's coastline lie many old shipwrecks of historic value—the English *Trial* sunk in 1622; the Dutch *Batavia* wrecked in 1629; *HMS Sirius*, the flagship of the First Fleet of settlement lost in 1790; the Bounty mutineer chaser *HMS Pandora* wrecked in 1791; sailing ships, whalers, cutters and steamships.

Shipwrecks provide direct evidence of the exploration of Australia, of the first industries such as sealing, whaling and trading, and of the perils facing convicts and migrants who voyaged to Australia. Relics of international maritime heritage are worthy of protection, conservation and study. Their importance for education, recreation and tourism is recognised by the Commonwealth *Historic Shipwrecks Act 1976* which applies to the coastal waters off all Australian States and Territories. Under this Act, any person finding the remains or relics of a previously unreported ship must notify its location to the Commonwealth Minister for the Arts, Sport, the Environment, Tourism and Territories. If the wreck is declared as being 'historic', the Minister is empowered to pay the finder a reward not exceeding $50,000.

Protection of movable cultural objects

The *Protection of Movable Cultural Heritage Act 1986* provides safeguards for the retention of important elements of national cultural heritage by requiring export permits for all objects of cultural significance which owners wish to send or take out of the country.

One category of objects, the loss of which would cause irreplaceable damage to Australia's cultural heritage, will not be allowed to leave, namely objects of Australian Aboriginal and Torres Strait Islander heritage comprising human remains, sacred and secret ritual objects, rock art, and carved burial trees.

Objects that may be exported (temporarily or permanently) at the discretion of the Minister of the Arts, Sport, the Environment, Tourism and Territories include:

- archaeological objects;
- objects of geological, scientific or technological interest;
- military objects;
- pieces of decorative art, fine arts, books, film and sound recordings;
- numismatic and philatelic objects;
- objects of social history.

National collections

State collections of art, botanical specimens, natural history, and science and technology have a long and distinctive history. Apart from the Australian War Memorial, opened officially in 1946, the Commonwealth has only recently taken responsibility for major national collections. The Australian National Gallery and the Australian National Botanic Gardens were established as prestigious national institutions in the early 1970s, with the former occupying its present permanent site only in 1982. The National Museum of Australia and the Australian National Maritime Museum are still new institutions with emerging distinctive contributions of their own to the collection and display of heritage materials of national significance.

Australian War Memorial

The Australian War Memorial commemorates Australian servicemen and women who died as a result of wars or warlike operations, from the Sudan campaigns to Vietnam. The Memorial building opened in Canberra in 1941.

The commemorative area includes the glass-mosaic Hall of Memory, cloisters containing bronze panels of the Roll of Honour bearing 102,000 names, and the courtyard in which there is a Pool of Reflection. The names of the 30 main theatres of war in which Australian forces served are inscribed around the courtyard. The national Anzac Day and Remembrance Day services attended by the Governor-General are held at the Stone of Remembrance in front of the building. Other wreath-laying ceremonies are also conducted at the Commemoration Stone in the courtyard.

The Memorial also fulfils its commemorative role by being a significant museum, art gallery, and centre of research into Australian military history. The Memorial's vast and varied collections include over 50,000 war relics ranging from aircraft to commemorative badges, 12,000 works of art by leading Australian artists, including Nolan, Dobell, Streeton and Lambert, and 8,000 posters, as well as extensive valuable official and personal documents and audio-visual records. The Memorial houses 43 Victoria Crosses—the largest such collection in the world. The War Memorial and its surrounds were entered in the Register of the National Estate in 1981, and attract 1.3 million visitors each year.

Australian National Botanic Gardens

The Australian National Botanic Gardens occupy a 90 hectare site on the lower slopes of Black Mountain in Canberra. Over 40 hectares of this site are developed at this stage.

Officially opened in 1970, they comprise the largest living collection of Australian native plants with over 7,000 species in cultivation. The associated herbarium houses over 185,000 specimens. An annexe of approximately 80 hectares was established at Jervis Bay in 1951 to cultivate frost tender plants under more favourable conditions than those prevailing in Canberra, and to establish a collection of native plants representative of the flora of the Jervis Bay region. There are over 400,000 visits to the Gardens each year.

An information centre, educational facilities and classrooms, and the Banksia Centre with its special garden and activity programs for disabled people, are part of the community services offered by the Gardens.

Horticultural, botanical and biological research is an important aspect of the Gardens' activities and special emphasis is placed on the study and cultivation of endangered species. The Australian Cultivar Registration Authority is also based at the Gardens.

Australian National Gallery

The Australian National Gallery in Canberra was established in 1975. The building was officially opened in 1982. The Gallery's aim is to acquire, conserve, research and make accessible a national collection of works of art for the benefit and enjoyment of all people. The Gallery is responsible for the national collection of Australian art and representative works of international art. To fulfil this aim the Gallery's acquisitions follow two key principles: works of art are selected on the highest aesthetic standards; and the Gallery's international collections are to complement existing public collections in Australia.

Australian art

The entire upper floor of four galleries has a permanent display presenting the full history of Australian art. The display incorporates Aboriginal art, paintings and sculptures, decorative arts, illustrated books, prints, drawings, watercolours, photographs and mural decorations.

International art

The Gallery began its collection of international art in 1972 and in a comparatively short time has acquired a range of masterpieces. They include Giambattista Tiepolo's *Marriage Allegory of the Cornaro Family*, Claude Monet's *Haystacks at Noon* and *Waterlillies*, Jean Batiste Houdon's *Bust of a Girl* and Joan Miro's *Landscape*.

National Museum of Australia

The National Museum of Australia was established under the *National Museum of Australia Act 1980*. It is located on an 88 hectare site at Yarramundi on the shores of Lake Burley Griffin in Canberra.

The Museum will be Australia's first national museum of the history of this country's people and their physical environment, from earliest times to the present. The visitor centre opened on the site in September 1986. The centre contains a theatre where videos and films are screened regularly, an exhibition *On the Horizon*, and a site model where plans of the major project are displayed. A discovery trail has been developed along a scenic part of the foreshore.

Australian National Maritime Museum

The Museum will be responsible for developing the national maritime collection with material reflecting the significance of maritime activity in the history and cultural life of Australia.

The Museum will be the first national collection institution to be located outside Canberra. An exhibition building is being constructed in Sydney at Darling Harbour, and is expected to be open to the public in 1988.

Archives and records

While general interest in archives in Australia was aroused following the celebration of the centenary of the colony of New South Wales in 1888, it was not until the twentieth century that measures were taken for the preservation, storage and servicing of original records. Initially, major libraries throughout Australia undertook the collection of historical records, from both official and private sources. Today, archives and records organisations exist for government records at Commonwealth and State level. Some State and Territory archives were established, since 1961, as separate authorities (New South Wales, Victoria, South Australia, Tasmania and the Northern Territory). Others remain as archives sections within State libraries.

In addition, archives have been established by some churches, business corporations, universities and city councils. The Australian War Memorial collects private material concerning Australians at war and is also a custodian of certain official Commonwealth records relating to wars or warlike operations. Other corporate and private records continue to be collected by some of the State archives offices, libraries and universities.

Many of these bodies in the archives or records field are members of the Australian Council of Archives which provides a means of promoting co-operation on issues of common concern.

Australian archives

The need for a Commonwealth archival agency was recognised in 1943 when the Curtin Government appointed both the Commonwealth National Library and the Australian War Memorial as provisional archival authorities. In 1952, the Commonwealth National Library became the sole Commonwealth archival authority, and in 1961 the Archives Division of the Library was reconstituted as a separate agency known as the Commonwealth Archives Office. At this time, the Archives Office became responsible for the evaluation, disposal and preservation of Commonwealth records, for taking into custody all records no longer required for immediate reference and for regulating access to those records by research workers and other members of the public. In 1974, the Commonwealth Archives Office was renamed the Australian Archives and a Director-General was appointed in 1975. By 1974 regional offices had been established in all State capitals and in Darwin and Townsville. Services to government agencies and the public are available from this regional network. The central office of the Australian Archives is located in Canberra.

The *Archives Act 1983*, which came into effect on 6 June 1984, provides the Archives with a statutory basis for its operations and institutes arrangements for the management and proper disposition of the vast body of records created by Commonwealth agencies, past and present. The Act provides for the gathering and provision of information about Commonwealth agencies and their records; the means by which the disposal of records is authorised; and for the storage and preservation of records.

By providing a legislatively based system of public access covering Commonwealth records more than 30 years old, the Archives Act complements the provisions of the *Freedom of Information Act 1982*. Together, these two Acts provide a comprehensive system of public access covering all classes of Commonwealth records.

The Australian Archives continued computer development work during 1986–87. The Records Information Service (RINSE), a database of information about the structure and function of government agencies and about their records, and the Access Information System (AXES), designed to provide agencies and the public with information about the accessibility of record items, were implemented nationally during the year. In addition, work proceeded on prototyping applications for the Physical Control System which records and provides a range of information needed to support the management of records scheduled for transfer to, or held by, Australian Archives.

At 30 June 1987 Australian Archives' holdings throughout Australia totalled 435,560 shelf metres of records, including 173,320 metres of permanent value material. In 1986–87, 1,874 official reference inquiries from agencies were received, 273,043 items were lent or returned to departments and authorities and 280,077 items were consulted by officials in the repositories. During the same period, 6,402 public reference inquiries were received and 27,984 items were consulted by the public in search rooms. As at 30 June 1987, Australian Archives had a staff of 411 full-time operative staff.

National Film and Sound Archive—NFSA

The National Film and Sound Archive was established by the Commonwealth Government in April 1984 and is located in the former Institute of Anatomy building in Canberra. The NFSA collects and preserves the moving image and recorded sound heritage of Australia, and provides a range of access services to the media industry, researchers, educators and the public.

The NFSA collection includes: 475,000 LPs (78s and 45s), 15,000 piano rolls, 10,000 phonograph cylinders, 6,000 Edison discs, 70,000 radio transcription discs, 25,000 audio tapes, 75,000 radio, film and television scripts, 50,000 film and television productions and 600,000 posters, photographs and advertising items.

The NFSA presents exhibitions on various themes related to the collection. Exhibitions are promoted interstate and there are regular screenings of films from the collection.

LIBRARY SERVICES

The Commonwealth supports a range of library services in areas not otherwise served by State systems. These include a concentration of functions appropriate to the national reference, curatorial and bibliographic services provided by the National Library of Australia, and more specialised services provided from other government departments.

National Library of Australia

The National Library in Canberra was formally established under the *National Library Act 1960*, which came into effect in March 1961. It was previously part of the Commonwealth Parliamentary Library. The National Library maintains and develops a national collection of library material in all subject fields and from all countries. It is also responsible for assembling a comprehensive collection of library material relating to Australia and the Australian people. In fulfilling its functions, the Library seeks to preserve books, periodicals, newspapers, government publications, pictures, prints, manuscripts, maps, music scores, and other material. Under the deposit requirement of the *Copyright Act 1968*, a copy of all printed material published in Australia is delivered to the National Library.

The Library has also been enriched by the acquisition of such notable collections as the Petherick collection of Australiana in 1911, the Cook manuscripts in 1923, the Mathews ornithological collection in 1940, the Rex Nan Kivell collection of Australian and Pacific interest in 1959, the Ferguson collection of Australiana in 1970 and the Tooley collection of rare maps of Australasia and South East Asia in 1973. The Library has a vigorous exhibition program in which regular exhibitions of paintings, prints and other historical material selected from its various collections are presented. Some of these exhibitions are sent interstate for display.

The National Library's collection of Australian and overseas material contains over 4 million volumes, including microfilms; 39,300 paintings, drawings and prints; 474,100 photographs; 6,800 shelf metres of manuscripts; 356,000 maps; 563,800 aerial photographs; 126,300 music scores; 21,250 films and video cassettes and 30,350 oral history and folklore tapes.

These materials may be used in reading rooms and in some cases are also available through the national inter-library loan system, in which the Library is a major participant. Reference services and access to computer based information services including the MEDLINE Network and the APAIS/AGP Online are provided. The Library in co-operation with other institutions provides for the development and co-ordination of library services for the disabled. The Library operates a film lending service to organisations in Australia.

The provision of central cataloguing services by the National Library achieves cataloguing economies on a national scale. The Australian Bibliographic Network, a national on-line shared cataloguing system launched by the Library in November 1981, now has over 6 million records. The Network has over 140 full participants and 550 dial-up customers from among Australia's libraries. Bibliographic records for Australian and overseas library materials are made available from the Library, both as catalogue cards and in machine-readable form. Under its Cataloguing-in-Publication program, the Library supplies cataloguing data to Australian publishers in advance of publication so that this information may be printed in the book to which it belongs. In this way, the book and its cataloguing data are available simultaneously to libraries, booksellers, bibliographers, and all others who need such data.

Co-operative bibliographical activity includes recording the holdings of the major Australian libraries in the National Union Catalogue of Australia, which is a series of specialised union catalogues maintained in the National Library for monographs, serials, newspapers, manuscripts, music, oriental language materials and library materials for the handicapped. At intervals they are published, and progressively they are becoming available on-line. The series of catalogues is described in the *Guide to the National Union Catalogue of Australia*, 7th edition, 1987.

The Library is a partner with the State Library of New South Wales in the Australian Joint Copying Project, which microfilms records relating to Australia, held in Great Britain and elsewhere.

A particularly important contribution to the National Library's role in the library community is its participation in two national consultative bodies. The Australian Advisory Council on Bibliographical Services is a co-operative association of libraries and other information agencies which seeks to encourage co-operation and the development of resources and services. The National Library provides the secretariat and meets the administrative costs of the Council's Standing Committee. The Director-General is the Library's representative on the Australian Libraries and Information Council which advises Commonwealth and State Ministers with responsibilities for the arts and cultural affairs on the nation-wide co-ordination of library and related information services.

Other Commonwealth libraries

Patent Office Library

The library of the Australian Patent, Trademarks and Designs Office in Canberra contains approximately 14,000 books and a wide variety of periodicals and other literature relating to science, technology, industrial property (patents, trademarks and designs), law and practice. The collection dates back to 1904, ensuring that its holdings of patent gazettes, journals and specifications are reasonably comprehensive. Patent specifications of inventions are received from the principal countries of the world. Present holdings are over 15 million with an estimated 600,000 patent specifications received annually. Document back-up is available through the sales centre.

Australian and some foreign specifications and related material are also available at sub-offices in Brisbane, Sydney, Melbourne, Adelaide, Perth and Hobart.

Commonwealth Scientific and Industrial Research Organisation—CSIRO

The Information Resources Unit (IRU), a component of the Bureau of Information and Public Communication, was formed in 1986 by the amalgamation of the CSIRO Central Library and the Central Information Service. Its objectives are to provide enhanced library and information resources for CSIRO scientists, and to improve marketing of information to the Australian science and technology industry.

The IRU complements and extends the information program in the CSIRO divisions where research takes place and is also the co-ordinating centre for the library network of over 40 libraries in divisions located Australia-wide.

The activities of the IRU are reported with all other units in the Annual Report of the Bureau of Information and Public Communication. This publication supersedes CILES' Report.

The Australian War Memorial Documentary and Audio-visual Records Centre

The Centre preserves the documentary and pictorial records of Australia's participation in armed conflicts. Printed audio and other material includes over 80,000 volumes (books and bound periodicals); thousands of unbound periodicals, leaflets, souvenir and microfilm items; a large collection of military maps; newscuttings and newspapers; sound recordings; war posters; postage stamps; and currency. Official records and personal papers occupy almost 2,000 metres of shelving. Official war photographs covering World War I, World War II, the Korean and Vietnam wars number over 670,000, and there are about 1.5 million metres of cinefilm. Facilities exist for reference and research.

Commonwealth Parliamentary Library

The Library provides comprehensive information and research services to the Commonwealth Parliament through the Legislative Research Service and the Library, Reference and Information Service. The Research Service comprises groups staffed by subject specialists who prepare analyses and interpretations of specific issues with which the Parliament is or may be concerned. The Library, Reference and Information Service answers questions and provides information from printed and other published sources. The Library collection is concentrated on topical material, supported by a wide collection of standard references; it totals some 150,000 volumes, including 9,000 serial titles. The Library publishes the *Commonwealth Parliamentary Handbook*, which is a standard reference work, topical annotated reading lists, general research papers from the Legislative Research Service, digests of bills and, in alternate weeks the *Index to Current Information* and *Select List of Acquisitions*. Extensive use is made of computer and on-line services, particularly in such areas as economic and electoral statistics and in the provision of information by librarians.

Australian Bureau of Statistics Library

The ABS Library in Canberra has a large collection of material on statistical methodology as well as year books, census reports and statistical bulletins from many countries and international agencies, covering periods in some cases from the turn of the century.

Departmental libraries

Each government department has a library or information unit to service its department's needs. Some of these libraries are available for public use.

Other libraries

State and municipal libraries

Most municipalities and shires have libraries funded by the local council with some State government assistance. A detailed description of libraries funded directly by the States is given in the respective State *Year Book*.

Children's libraries and school libraries

Children's libraries exist in all States, usually as branches or extensions of municipal libraries.

University and college libraries

The Commonwealth Government has, since 1957, supported the development of university and college of advanced education libraries.

CREATIVE ARTS

The arts in Australia receive considerable financial support from the Commonwealth Government. This support is complemented by State, Territory and local governments. Governments provide funds for virtually all aspects of creative artistic life. Major arts facilities have opened in Canberra, Sydney, Melbourne, Brisbane, Perth, Adelaide and Darwin. The number of regional art museums and performing arts centres has increased in recent years. In the past decade the number of major international art exhibitions touring capital cities has increased. Community and folk arts have gained recognition, and the Australian film industry is emerging once again as a major contributor, in economic and artistic terms, to Australian cultural life.

The activity of governments in encouraging and supporting culturally important activities is complemented by non-government sponsors, organisers, entrepreneurs and patrons of the arts. Private and corporate investment in the arts is being encouraged, and joint ventures between government and corporate sponsors for large scale events, tours or exhibitions are not uncommon.

National activities

The Commonwealth Government formulates policy guidelines for the support of the arts generally and allocates funds annually to the national arts institutions under its jurisdiction. Commonwealth/State consultation on cultural matters takes place through such bodies as the Cultural Ministers Council, the Australian Libraries and Information Council and the Advisory Committee on National Collections.

Australia Council

The Australia Council is the Commonwealth Government's chief funding body and policy adviser for the arts. Established as a statutory authority in 1975, its responsibilities are detailed in the *Australia Council Act 1975*. Broadly speaking, the Council's brief is to formulate and carry out policies to help raise the standards of the arts in Australia, to enable and encourage more Australians to become involved in the arts and to enable Australians and people in other countries to become aware of Australia's cultural heritage and achievements. Artists and arts organisations are assisted financially by the Council through its specialist art form boards.

In May 1987, the Government announced changes to the structure of the Australia Council in response to the Report of the House of Representatives Standing Committee on Expenditure Inquiry into Commonwealth Assistance to the Arts (the McLeay Report), to revitalise arts support mechanisms and policies for the next decade. Under the new arrangements, the Council is to consist of fifteen members made up of the Chair of Council, all chairs of Boards, arts practitioners and representatives of the broad public interest, and Council's General Manager as an ex-officio member. The number of Boards has been reduced from eight to five, and covers the literary arts, visual arts and craft, design, the performing arts and Aboriginal arts. The Boards are also to be representative of artistic and broad public interests.

Community cultural development

A new Community Cultural Development Unit is to be formed to elevate the Council's Community Arts focus and provide for integration with the activities of the artform boards. The functions and funding role of the former Community Arts Board will transfer to the new unit which will have a broader brief to foster community cultural development. Council will have ultimate responsibility for community arts development, and will assist community involvement by encouraging the development of the closer integration of arts practice into everyday life and growth of an independent culture that reflects the diverse composition of Australian society.

The Community Cultural Development Unit will also administer programs in support of Multicultural Arts, Youth Arts, Touring and Access and Art in Working Life.

ALLOCATION OF FUNDS FOR PROGRAMS, BOARDS AND ADMINISTRATION OF THE AUSTRALIA COUNCIL, 1986–87
($'000)

Boards—	
Aboriginal Arts	2,897
Community Arts	3,584
Crafts	2,245
Design	680
Literature	3,160
Music	(*a*)12,265
Theatre	(*b*)13,363
Visual Arts	2,451
Total boards	*40,645*
Programs—	
Advocacy	20
Arts Information	475
Inter-board	1,598
International	187
Policy and Research	305
Touring and Access	647
Total programs	*3,232*
Total support for the arts	43,877
Administration	6,694
Total appropriation	**50,571**

(*a*) Includes $4,490,000 for the Australian Opera and $3,978,000 for Orchestras. (*b*) Includes $2,148,000 for the Australian Ballet.

Aboriginal arts

The Aboriginal Arts Board supports activities involving the preservation and continuation of traditional cultural practices and their associated arts forms, as well as the generation of new artistic expression among Aboriginal people in urban and country areas.

Design

The Design Board provides a focus for design activity in Australia. A major part of its work is to promote the value and principles of design to the widest possible audience. While the Board's activities and grants program are primarily directed to projects at present, support for professional development and for individuals has been identified as a future area of concern.

Literary arts

The Literary Arts Board, formerly the Literature Board, encourages all forms of Australian creative writing through direct grants to writers, and the subsidising and promotion of the resultant works. More than half of the Board's annual expenditure goes in grants to writers to meet travel, research and other expenses.

Performing arts

The new Performing Arts Board, integrating the former music and theatre boards, facilitates consideration of issues common to the performing arts such as training, performance venues and administration. The board will also continue to encourage and support the development of music in Australia and the promotion of Australian music and musicians overseas, and the development of performance, content and production of dance, drama, puppetry, mime and young people's theatre, which stems from and relates to the Australian experience.

Australia has eight fully professional orchestras managed by the Australian Broadcasting Corporation namely a symphony orchestra in each State capital city. The other two orchestras, the Elizabethan Sydney Orchestra and the State Orchestra of Victoria, are predominantly engaged in work with the Australian Opera (Sydney) and the Australian Ballet (Melbourne). The Board provides continuing support for some 80 drama, dance, puppetry, mime and youth companies and provides opportunities for professional theatre people to develop their skills, encourages growth in theatre attendance and promotes community involvement in live theatre.

Visual arts/craft

The Visual Arts/Craft Board has been designed to link related, but distinct art forms. The Board continues the work of the former Visual Arts Board in providing assistance to individuals and organisations working across a wide spectrum of the visual arts in Australia, from painting and sculpture to museology. Programs include grants to individuals, the commissioning and placing of works of art in public places, research and writing on the visual arts, support for artists in residence and the acquisition, exhibition and conservation of works of art.

In the area of crafts, the Board encourages continuing improvement in the quality of crafts practised in Australia, and provides greater opportunities for craftspeople to further their professional development. It fosters wider community access to the crafts and promotes an awareness of Australian crafts overseas and of work of other countries in Australia.

Other Commonwealth schemes in support of the arts

Artbank

Artbank is a unit of the Department of the Arts, Sport, the Environment, Tourism and Territories, set up to encourage young Australian artists through the purchase and public display of their work, thereby complementing other Commonwealth art support schemes. Since its inception in 1980, the Artbank collection has grown to more than 5,000 works, including paintings, artists' prints, sculpture, photography, Aboriginal art, and craft. Approximately 1,500 artists are represented in the collection.

Taxation incentives for the arts

The Taxation Incentives for the Arts Scheme came into operation on 1 January 1978 under section 78 of the *Income Tax Assessment Act 1936*. The scheme encourages the donation of gifts in kind to public art galleries, museums and libraries by allowing donors a taxation deduction.

Historic Memorials Committee

The Historic Memorials Committee was established in 1911 to secure portraits of distinguished Australians who took an active part in Federation. Later the Committee decided to obtain portraits or other representations of all Governors-General, Prime Ministers, Presidents of the Senate, Speakers of the House of Representatives, Chief Justices of the High Court of Australia and other distinguished Australians. In addition, the Committee has commissioned paintings or other representations to record special events connected with the Commonwealth Parliament and, more recently, the High Court of Australia. The collection is located in Parliament House.

Commonwealth indemnification of exhibitions

In 1979 the Commonwealth introduced a scheme under which national and international touring art exhibitions could be approved for Commonwealth indemnity against loss or damage of the works involved. The scheme ensures that the Australian public has the opportunity to see major international and Australian touring art exhibitions which would be uneconomic without indemnity due to the prohibitive cost of insuring such major works. The scheme also covers Australian exhibitions travelling overseas, sponsored by the Australia Council, for which indemnity is not available from the host country and without which Commonwealth indemnity could not proceed.

Thirty-seven exhibitions were indemnified by the Commonwealth between 1979 and 1987. They ranged from traditional Aboriginal artefacts through ancient Chinese and European archaeological finds to paintings, prints and drawings from a wide variety of countries, styles and schools.

International Cultural Corporation of Australia Limited—ICCA

ICCA was established by the Commonwealth Government in 1980 as a non-profit public company to arrange and manage international exhibitions and events of art and culture.

Its principal activities are three-fold. Firstly, working in close collaboration with Australian and overseas galleries and museums, it brings to Australia significant exhibitions of artistic, cultural and historical interest. Secondly, it works with the Australian Government to send exhibitions of Australian art and other examples of national cultural achievements overseas. Thirdly, it offers consultancy and advice to Commonwealth, State and overseas governments, and to galleries and museums.

To date, the corporation has managed 25 exhibitions and events, among them, 16 major touring exhibitions. Total audiences have exceeded 3 million.

The Australian Government provided funds totalling $1 million between 1980 and 1983, but since then the corporation has been self-supporting. ICCA has attracted $8.5 million of sponsorship support—from 31 companies and 13 public sector sources.

ICCA works in close collaboration with the Department of the Arts, Sport, the Environment, Tourism and Territories through which it operates the Australian Government's Indemnity Scheme. ICCA also works with the Department of Foreign Affairs and Trade, the Australia Council and other government and cultural agencies in Australia and overseas. Its continuing contractual partners in exhibition activities are the Australian galleries and museums.

Public Lending Right Scheme

The Public Lending Right Scheme, established by the Commonwealth Government in 1974, makes compensatory payments to Australian authors and their Australian publishers for the use of their books in public lending libraries. Eligible books must be created by Australian citizens and residents and meet certain eligibility criteria.

The scheme aims to resolve the apparent conflict between providing a free library system and ensuring that Australian writers, editors and other creators receive a fair payment for the use of their books.

The scheme's annual payments amount to approximately $1.9 million. Payments to authors and publishers are based on annual sample surveys of bookstocks of public lending libraries throughout Australia.

Other arts organisations

Arts Council of Australia

The Arts Council of Australia is a community based incorporated body funded through the Australia Council and State government arts authorities. The Central Secretariat of the Council is in Sydney, with divisions in all States and Territories.

The Council's historical role has changed over the last few years. Access to and participation in a much wider range of arts experiences is provided through tours by State theatre, opera and ballet companies, local festivals and workshops, theatre-in-education teams and artists-in-residence. The voluntary committees, which number about 250 throughout Australia, receive support, help and training from the nine professionally-staffed head offices.

The Council also administers grants on behalf of other bodies such as the Australia Council and State arts authorities.

Australian Elizabethan Theatre Trust

The Australian Elizabethan Theatre Trust, established in 1954, was originally formed to present drama, opera, ballet and puppetry throughout Australia. Full autonomy has been accorded to most of the performing companies established by the Trust. The Trust's major functions are to administer the Elizabethan Theatre Trust Orchestras; to act as entrepreneur in the touring of theatre features from overseas and Australian sources; and to provide general services, including tax deductibility for donations, for theatre organisations.

The Trust receives annual grants from the Australia Council and State and local governments. Its revenue is supplemented by subscriptions, donations and its own activities.

The Australian Ballet

The Australian Ballet, established in 1961 as the national classical ballet company of Australia, first performed in Sydney on 2 November 1962 and was registered as an incorporated company in 1970.

Fifty-six dancers perform on stage supported by 33 artistic, music, production and theatre staff and 27 marketing, publicity, administrative and finance staff—a total of 116.

The Australian Ballet gives about 185 performances every year in the Australian cities of Sydney, Melbourne, Brisbane, Adelaide and Perth and has toured overseas regularly. Tours since 1965 are listed below.

1965	Royal Opera House and Covent Garden, London and Baalbeck, Lebanon
1967	North and South America
1968	South East Asia
1970–71	United States of America
1971	Singapore and Philippines
1973	U.S.S.R., Eastern Europe and London
1976	New York, Washington, London and Philippines
1978	Jakarta
1979	Greece, Israel and Turkey
1980	The People's Republic of China
1981	Mexico
1987	Japan and China

The Commonwealth and State Governments of Australia provide yearly grants to the Australian Ballet, contributing 22 per cent of its total income, but its main source of revenue is ticket sales which bring in more than $6 million. Many businesses and commercial organisations provide sponsorships which total in excess of $1 million. Operating costs exceed $10 million per annum. Orchestras for Australian performances are funded by government grants and conducted by the Australian Ballet's music director and guest conductors.

Festivals

The number of festivals devoted solely or partly to the arts now totals about 400 a year. The two biggest are Adelaide's biennial and Perth's annual festivals, both of which last several weeks and present overseas artists as well as leading Australian companies.

Many country centres now have arts festivals which attract performers and artists from a wide area. Seminars, arts workshops and community participation programs are increasingly popular.

The Australian Opera

The Australian Opera is the largest performing arts organisation in Australia, employing over 200 permanent staff including 31 principal singers and a chorus of 48. In addition, it employs over 500 casuals each year, including a number of celebrated international singers. The projected budget for the Opera in 1988, excluding the cost of orchestras, is over $23 million. This is derived from the following sources—59 per cent box office and other earned income, 26 per cent government subsidy, and 15 per cent private contributions. The Opera, with headquarters in Sydney, tours annually to Melbourne and Brisbane. Opera performances in the parks and on television and radio are increasingly being utilised by the company to provide all Australians with access to opera.

Musica Viva

Musica Viva Australia is Australia's national chamber music entrepreneur. A non-profit company founded in 1946, it presents concerts mainly of chamber music but also of other types of fine music by Australian and overseas artists.

Musica Viva receives subsidies from the Performing Arts Board of the Australia Council and several State governments, with the balance of its income coming from ticket sales, sponsorship and donations.

It also manages tours by Australian artists overseas, often in association with the Department of Foreign Affairs and Trade, operates an extensive program in education, and commissions new music from Australian composers. In 1987, Musica Viva presented over 1,500 concerts throughout Australia and overseas.

Film and television

Encouragement of the Australian film industry is a firm policy objective of the Commonwealth Government. The following funds were allocated to film-related organisations in 1986–87:

- Australian Film Commission—$20.7 million (includes $6 million for the special production funds);
- Australian Film, Television and Radio School—$8.5 million;
- Australian Children's Television Foundation—$0.5 million.

Australian Film Commission

The Australian Film Commission is a statutory authority established in 1975 to encourage the development and growth of an indigenous film industry.

The Commission addresses this responsibility by managing the expenditure of over $28 million on film production and financial assistance to independent film makers, by offering a legal, business and marketing advisory service, and by producing films for government departments and programs in the national interest.

The Film Development Division, through the Script Office and various funds (Creative Development, Special Production, No Frills, and Women's Film Funds), provides financial support to individuals for script development and production, and offers financial facilities for projects entering production. In addition to these responsive funds, specific programs have been introduced to target particular industry needs. These programs concentrate on developing skills with a select group of film makers. They include a Documentary Fellowship, a Producer Support Scheme and a Comedy Fund.

Film Australia is being re-established as a wholly owned government company as the Commonwealth's film and video production unit, producing about 80 projects (predominantly documentaries) each year, which are marketed in over 26 languages. Programs are made for client Government departments, and on a range of social, cultural, educational and scientific issues. Film Australia distributes its programs widely to the education market, government film libraries, and television networks in Australia and overseas.

Twenty-eight features, 21 telemovies and thirteen mini-series were produced outside the television networks in 1986–87 for approximately $148 million.

In 1986, cinema admissions increased by 11 per cent on 1985 figures, with approximately 35.5 million attendances. Australian films claimed a 17.7 per cent share of the gross box office in capital cities.

Taxation Incentives for Films Scheme

The scheme which is embodied in Division 10BA of the *Income Tax Assessment Act 1936* was established in October 1980 to encourage private investment in Australian films. The scheme allows taxation concessions for private investors in qualifying Australian films which have been issued with a certificate to that effect by the Commonwealth Minister for the Arts, Sport, the Environment, Tourism and Territories.

Qualifying Australian films are feature films and films of a like nature for television (telemovies); documentaries; and mini-series of television drama. Further they must be produced principally for public exhibition in cinemas or on television, be substantially made in Australia and have a significant Australian content.

Film budgets totalling $179.7 million were secured by investment under the scheme in the 1986–87 financial year.

Australian Children's Television Foundation

The Australian Children's Television Foundation was incorporated in Victoria in March 1982. Its aim is to improve the quality and quantity of children's programs on Australian television. It has actively pursued this objective by investing in script development and program production and by undertaking related educational and informational activities. The Foundation receives assistance from Federal, State and Territory Governments (with the exception of Queensland). In 1986–87, $0.5 million was provided by the Commonwealth with a matching contribution sought from the other participating governments on a State/Territory per capita basis.

Film censorship

The Commonwealth's censorship powers derive from Section 51 (1) of the Constitution, which enables the Commonwealth to regulate trade and commerce under the Customs Act. Section 50 (1) of the latter Act provides that the Governor-General may, by regulation, prohibit the importation of goods into Australia. The Customs (Cinematograph Films) Regulations, which establish the Film Censorship Board and define its legislative role and functions, flow from that Section.

The Board is a full-time statutory body located in Sydney. Regional censorship officers, with limited powers and functions, are located in Canberra, Melbourne, Brisbane, Adelaide and Perth. The Board is administered by the Attorney-General's Department.

Under the Customs (Cinematograph Films) Regulations, the Board examines imported films and videotapes to determine whether to register or to refuse to register them for public exhibition. It also examines film advertising. The Regulations direct the Board not to pass films or advertising matter which in its opinion are:

- blasphemous, indecent or obscene;
- likely to be injurious to morality, or to encourage or incite crime;
- undesirable in the public interest.

The Board's State functions in relation to cinema films, including classification, are performed by virtue of formal agreements with the various States. Decisions on matters arising under the Regulations and on classifications under State/Territory legislation may be appealed to the Films Board of Review.

Feature films

In 1986, 632 feature films were processed. Twelve feature films were refused registration and deletions made in 5. There were 16 appeals, of which 11 were upheld and 5 dismissed. Of 632 features, 55 were classified For General Exhibition ("G"), 163 Parental Guidance ("PG") 210 For Mature Audiences ("M") and 82 For Restricted Exhibition ("R"). Permissions to import for use at film festivals were granted to 107 films, and 3 were passed subject to special conditions.

The principal countries of origin were United States of America (248 films), Hong Kong (92 films), United Kingdom (62 films), Japan (40 films), Australia (33 films) and France (30 films).

While the "M", "PG" and "G" classifications are advisory, persons who have attained the age of two years and who have not attained the age of 18 years are excluded by law from seeing "R" rated films.

Videotapes

The Board examined 2,335 television features for sale or hire in 1986. There were 13 appeals, 9 upheld and 4 dismissed. 583 feature titles were classified "G", 402 "PG", 544 "M", 382 "R" and 347 "X". 77 were refused classification. The "X" classification is applied only to videotapes in the A.C.T. and Northern Territory which contain non-violent explicit sexual material. Such material is prohibited in the States.

Professional training in the arts

Professional training in the arts in Australia covers a broad range of resources. Training is available through formal educational programs in TAFE, advanced education and university level courses. There are also a number of on-the-job training programs available in the arts. Very few national institutions deal specifically with professional training in the arts.

National Arts Industry Training Committee Limited—NAITC

The Committee was established in 1986 as a national organisation dealing specifically with vocational training needs in the arts industry. NAITC is not a training organisation in itself, but aims to ensure that training meets present and future needs of those involved in the arts. The Committee undertakes a number of activities to achieve its aims. NAITC encourages dialogue within the arts community about training needs and develops programs based on these discussions. It acts as an important resource centre on information regarding available training in Australia. NAITC undertakes a series of research projects to examine specific training needs in difference sectors of the arts industry. These have included the investigation of training for industrial design, live theatre technicians and management skills training for the rock industry. NAITC liaises with State and Federal Government, educational institutions and others involved in policy making for arts training and so acts as an advocacy body. NAITC is a tripartite organisation, consisting of employers, employees and Federal Government representatives. Membership includes organisations involved in film, television, literature, design, crafts, performing and visual arts. The Commonwealth provides funds for NAITC through the Department of Employment, Education and Training. Additional funds in the form of financial contributions and in-kind support from the arts community supplement government grants.

Australian Film, Television and Radio School

The School was established in 1973 as an Australian Government statutory authority. It is responsible for providing advanced education and training for industry professionals, as well as the development, through its full-time and short courses, of outstanding new talent.

The School undertakes, co-ordinates and disseminates research in connection with the production of programs. Training needs are assessed and employment trends in the industry are evaluated. The School maintains an extensive library of print and non-print material related to film, television and radio.

National Institute of Dramatic Art—NIDA

The Institute is Australia's national training school for young people who wish to enter the profession of theatre, film and television as actors, directors, designers or stage managers. The Institute's courses are designed to meet the needs of the arts entertainment industry by assisting students to develop the craft skills, cultural background and arts discipline required for successful careers in their chosen field.

The Institute's students number approximately 130 and it has a staff of 30 full and part-time teachers. Each year, some 50 new students are enrolled from over 1,500 applicants from throughout Australia.

RECREATION, FITNESS AND SPORT

The Department of the Arts, Sport, the Environment, Tourism and Territories has a general responsibility in the national sphere for recreation, fitness and advice on sport policy.

All State governments have also established agencies with special responsibilities for recreation and sport. Increasing numbers of local government authorities are employing recreation workers who are responsible for planning the use of recreation facilities, and for devising recreation programs.

National activities

The Sport and Recreation Ministers Council (SRMC) provides the major mechanism for liaison between the Commonwealth, State and Territory governments on matters concerned with sport and recreation in Australia. The Council is a forum for consultation and co-operation between the respective governments, and its membership comprises the Ministers with prime responsibility for sport and recreation. Both New Zealand and Papua New Guinea have observer status on the Council.

The SRMC is assisted by the Standing Committee on Recreation and Sport (SCORS). The Department provides secretariat support to the Council, the Standing Committee and its sub-committees.

Standing Committee on Recreation and Sport—SCORS

The Standing Committee comprises representatives from the Commonwealth, State and Territory departments or agencies responsible for sport and recreation. It has established two permanent sub-committees; the Sub-committee on Fitness and the Consultancy Fund Sub-committee.

The objectives of the Sub-committee on Fitness are to:

- provide a mechanism by which the Commonwealth, State and Territory departments can support and assist each other in developing fitness programs;
- provide advice to SCORS on:
  - matters relating to fitness;
  - areas of co-operation in planning, implementing and evaluating fitness programs, facilities and services;
- undertake specific tasks in the area of fitness as directed by SCORS;
- initiate, in conjunction with other agencies where appropriate, approved projects relating to fitness.

The Consultancy Fund Sub-committee is generally responsible for advising the Standing Committee on the operation and management of the SRMC Consultancy Fund. The Consultancy Fund has been established jointly by the Commonwealth, State and Territory Governments to enable the council to undertake, on a co-operative basis, projects of common interest.

The Consultancy Fund Sub-committee is responsible for:

- advising SCORS on an annual program to be funded from the SRMC Consultancy Fund;
- implementing projects in accordance with the approved funding program;
- monitoring the progress of projects and presenting reports and recommendations;
- advising SCORS on the dissemination and publication of the results of such projects.

Projects funded from the Consultancy Fund include: an evaluation of the economic impact of the World Cup IV in athletics; the preparation of a booklet for use by sporting organisations on talent development; a study into the employment potential of recreation, sport and fitness in Australia; an evaluation of the effectiveness of the national coaching accreditation scheme; and a study into the social, economic and sporting benefits of hosting specific major international sporting events in Australia.

The Standing Committee has also set up several ad hoc working parties to provide advice on matters of specific concern in the area of sport and recreation.

Recreation and Fitness Program

In 1986-87, $610,000 was provided to assist in increasing opportunities for participation in safe recreation and fitness activities under this program.

Fitness of Australian youth

Between 1984 and 1986, the Commonwealth provided $327,000 in grants to the Australian Council for Health, Physical Education and Recreation (ACHPER) to conduct a national survey of the fitness, health and physical performance of Australian school children. The survey provided benchmark data on the health and fitness of young Australians against which the future effectiveness of health and fitness programs can be measured. Since then, the Commonwealth has provided $100,000 in grants to ACHPER to assist the development of national fitness awards for school children. The awards will encourage participation in regular physical activity and reward achievements at various levels.

Employee fitness, health and recreation

Following earlier initiatives in this area, the Commonwealth has developed an information package on workplace fitness programs entitled 'Health and Fitness at Work—It Works'. This comprises a video and card series which describes successful Australian workplace programs and a booklet for guidance in the establishment of health and fitness activities in the workplace.

Community fitness and recreation

Between 1984 and 1987, the Department of Arts, Sport, the Environment, Tourism and Territories conducted several national surveys on the physical activity and recreation patterns of Australians. This information has assisted in identifying factors associated with active and inactive Australians, and provided a basis for both planning and evaluating programs. A number of reports on survey results have been published. A national conference will be held in 1988, to develop a national action plan for the promotion of physical activity and other aspects of a healthy lifestyle.

National sports facilities program

Between 1984–85 and 1987–88 the Commonwealth has spent $32.8 million on the construction of international standard sports facilities under the National Sports Facilities Program.

The aim of the program is to encourage and assist with the construction of a range of sporting facilities to give Australian athletes the opportunity to train and compete on a similar basis to their overseas counterparts and enable Australia to be more successful in attracting international competition.

Sport and recreation for people with disabilities

The National Committee on Sport and Recreation for the Disabled (NCSRD) was established in 1981 to advise the Minister on matters relating to the development of sport and recreation for disabled people. Its primary function is to make recommendations to the Minister responsible for sport and recreation on:

- priority areas for the development of sport and recreation for disabled people;
- allocation of funds provided to assist sport and recreation for disabled people.

The Department of the Arts, Sport, the Environment, Tourism and Territories administers the Program of Assistance for Sport and Recreation for Disabled People (PASRDP) based on advice from the NCSRD. The program has the aim of assisting national sporting and recreation organisations for people with disabilities and providing sport and recreation opportunities for disabled people.

The following table outlines the allocation of program grants by category in 1986–87.

GRANTS TO PASRDP, 1986–87

	$
Administration	
General	44,700
Personnel	137,000
National Championships	34,070
International	
Competition	192,900
Meetings	21,375
Integration	33,940
Junior Sports Development	25,000
Recreation Projects	115,001
Total	**603,986**

In 1986–87, $825,000 was allocated to the program. A total of $603,986 was granted to various sport, recreation and community organisations involved in the provision of sport and recreation services and programs for disabled people, and $30,000 for a national seminar on junior sports development for people with disabilities.

Two new programs designed to assist disabled sports people were implemented in 1984–85. They were the National Disabled Athlete Award Scheme (NDAAS) and the Elite Disabled Athlete Assessment Centre Program (EDAACP).

The objective of NDAAS is to encourage high performance disabled athletes to continue their involvement in sport and maintain or improve performance levels. The scheme provides direct financial assistance to individuals to defray costs associated with competition, training and travel. $72,000 was allocated to NDAAS in 1986–87, and in 1987 grants were awarded to 23 disabled athletes.

EDAACP, now entitled DAACP, was established as a 3-year pilot study. The program is designed to offer disabled athletes access to physiological and psychological assessment facilities, as well as to provide high level disability-specific coaching advice. The program was allocated $91,814 in 1986–87.

Australian Institute of Sport—AIS

The Australian Institute of Sport was established in 1980 to provide high performance athletes with the opportunity to develop their sporting potential through first class coaching, in international standard facilities and with access to scientific and medical support. For its first 6 years, the Institute functioned as a public company. On 1 January 1987, the Institute became a statutory authority.

In 1986–87 scholarships were provided to 303 high performance sports people in 14 sports—basketball, cycling, diving, gymnastics, hockey, netball, rowing, soccer, squash, swimming, tennis, track and field, water polo, and weightlifting. Sportsmen and sportswomen attending the Institute are also able to undertake secondary or tertiary education or obtain regular employment.

The AIS Board of Management, appointed by the Minister responsible for sport, develops the Institute's policy and priorities. At the end of June 1987, the AIS had a staff of 168, comprising 101 administrative staff, 41 sports coaches and 26 sports science/sports medicine personnel. The Institute's headquarters are located at Bruce in the Australian Capital Territory. Decentralised units have been established in Perth to cater for hockey, Brisbane for squash and diving, and Adelaide for cycling.

In 1986–87 the Government provided $12.7 million to cover the operational, development and facility management costs of the Institute. In addition to the resident sports program, the Institute administers the National Sports Program (formerly the National Training Centre Program), which offers sportsmen and sportswomen the opportunity to use the AIS facilities, resources and expertise for national selection trials, team training, talent development programs, coaches' seminars, and workshops for sports officials. Overseas athletes and coaches regularly visit the Institute.

Australian Sports Commission

The Australian Sports Commission (ASC) was established on 1 July 1985 as a statutory authority, with the aim of providing leadership and long term direction for the future development of sport in Australia. A principal objective is to assure continuity and stability of sports development.

In 1986–87 the Government provided $9.6 million for the Commission's program and administrative expenses. Included in the budget for 1986–87 was $7.3 million for the Sports Development Program.

The objectives of the Australian Sports Commission reflect directly the reasons for the establishment of the Commission which are to:

- maximise funding for sport from the private sector, to supplement funds from the Commonwealth Budget;
- provide leadership in the development of Australia's performance in international sport;
- increase the level of participation in sport by all Australians.

It is the overriding aim of the Commission to make a significant contribution to the development of Australian sport at all levels as a flexible, innovative partner in the community of sport. The Commission also provides a focus to achieve a greater degree of co-ordination within that community to ensure that available financial resources, expertise and experience are used to maximum effect.

The ASC is responsible for a range of specific functions, namely to:

- advise the Minister in relation to the promotion and development of sport;
- raise money through the Australian Sports Aid Foundation for the purposes of the Commission;
- administer and spend money from the Budget or raised by the Sports Aid Foundation for the purposes of the Commission;
- co-ordinate activities in Australia for the promotion and development of sport;
- consult and co-operate with appropriate authorities of the Commonwealth, of the States and of the Territories, and with other organisations, associations and persons, on matters related to its activities;
- initiate, encourage and facilitate research and development in relation to sport;
- collect and distribute information, and provide advice, on matters related to its activities.

Assistance to national sporting associations

The ASC provides financial assistance to national sporting associations. This includes employing national executive directors and coaching directors, contributing to international competitions, administrative support and development projects.

Sports talent encouragement plan

The scheme provides direct financial assistance to world-ranked Australian individual athletes and teams and to athletes demonstrating a capacity to achieve world rankings. The assistance contributes towards the costs of training and competition.

Applied Sports Research Program

The Commission provides funds under the Applied Sports Research Program which enables national organisations to utilise tertiary institutions to carry out research related to their sport.

Children in sport

Assistance is provided to national sporting bodies to assist junior sports development. In additional, the Commission has established the AUSSIE SPORTS program to improve the quality and variety of sport for primary school children.

Equity and access

The Commission is also concerned to increase participation in sport among groups which have not had sufficient access to sporting opportunity.

Drugs in sport

Funds have been provided to the National Program on Drugs in Sports Committee. This has enabled the employment of a full-time co-ordinator and the preparation of educational material. Drug testing programs are also being developed.

Australian Coaching Council

The Commission funds the position of Australian Coaching Council Director responsible for the National Coaching Accreditation Scheme and for the development of resource materials. The position reports directly to the Coaching Council, which is funded by the Commission.

ENVIRONMENT AND CONSERVATION

Protecting and regulating the environment are primary responsibilities of State and local governments. The Commonwealth Government has become involved in environmental policy and regulation through increased community awareness of the fragility of the environment on a national scale when subject to pressure of human activity. The Senate Standing

Committee Reports on Air and Water Pollution of the late 1960s were the first concerted attempt to place environmental policy on the Commonwealth legislative agenda.

The *Environmental Assessment (Impact of Proposals) Act 1974* was the first piece of Commonwealth legislation to address environmental issues. The act defined environment as comprising 'all aspects of the surroundings of human beings, whether affecting them as individuals or in social groupings', and set up procedures to review adverse impacts of development proposals which involved Commonwealth Government decisions.

Since then, the Government has intervened on a number of occasions where environmental values were attracting broad community attention, notably the mining of Fraser Island in Queensland and the damming of the Franklin River in South West Tasmania. Through these and other actions, the Commonwealth Government has been drawn into areas of environmental policy, planning and management not adequately covered by existing State administrative arrangements.

This national recognition of environmental values has been preceded by years of community action and debate. In April 1986, the Australian Bureau of Statistics conducted a survey of households throughout Australia to measure environmental awareness. Results from the survey show that people take an active interest in the environment.

The first half of this section sets out major findings from the 1986 survey; the second half covers areas of involvement by the Commonwealth and its agencies in environmental management, and the co-ordination of conservation and regulation activities undertaken at State, Territory and local levels.

Awareness of environmental issues

In April 1986, 47 per cent of the population aged 15 years and over (5.5 million persons) was concerned about problems with the environment in Australia. The percentage was slightly higher for females than for males, and the percentage in the 25–44 years age group was significantly higher than other age groups. The problems that most concerned people were pollution (30 per cent), nature conservation (21 per cent) and deforestation (19 per cent).

PERSONS CONCERNED ABOUT THE ENVIRONMENT BY AGE GROUPS: TYPE OF ENVIRONMENTAL PROBLEM

Type of environmental problem	*Age group (years)*						
	15–24	*25–34*	*35–44*	*45–54*	*55–64*	*65 and over*	*Total*
			— number ('000)*(a)* —				
Pollution	643.3	909.0	786.2	507.1	392.1	300.4	3,538.1
Nature conservation of flora/fauna	476.5	650.2	530.4	311.1	247.9	190.3	2,406.4
Tree deforestation	390.1	582.9	500.3	285.3	241.2	183.7	2,183.5
Nuclear issues/uranium	427.8	521.9	372.3	181.4	141.9	107.1	1,752.3
Development/planning issues	162.2	293.5	270.1	153.8	137.6	101.2	1,118.4
Soil erosion	160.6	295.1	260.2	142.1	125.2	91.0	1,074.2
Preserving buildings	138.3	240.3	224.6	124.3	102.3	78.7	908.4
Water salinity	131.3	246.8	211.7	112.9	96.4	66.7	865.9
Other	81.1	116.8	115.2	70.4	71.4	63.8	518.7
			— per cent *(a) (b)* —				
Pollution	25.1	36.1	35.7	33.0	27.4	19.9	30.1
Nature conservation of flora/fauna	18.6	25.8	24.1	20.3	17.3	12.6	20.5
Tree deforestation	15.2	23.1	22.7	18.6	16.8	12.1	18.6
Nuclear issues/uranium	16.7	20.7	16.9	11.8	9.9	7.1	14.9
Development/planning issues	6.3	11.6	12.3	10.0	9.6	6.7	9.5
Soil erosion	6.3	11.7	11.8	9.3	8.7	6.0	9.1
Preserving buildings	5.4	9.5	10.2	8.1	7.1	5.2	7.7
Water salinity	5.1	9.8	9.6	7.4	6.7	4.4	7.4
Other	3.2	4.6	5.2	4.6	5.0	4.2	4.4

(*a*) Respondents were allowed to register more than one concern. (*b*) Percentages are expressed as proportions of civilian population 15 years and over excluding those persons for which no answer was obtained.

Pollution and other environmental complaints

442,000 persons, or about 4 per cent of the population aged 15 years and over, actually registered complaints about pollution in the twelve months to April 1986. 558,000 persons (5 per cent) registered complaints about other environmental problems.

PERSONS REGISTERING COMPLAINTS ABOUT POLLUTION AND OTHER ENVIRONMENTAL PROBLEMS, TWELVE MONTHS ENDED APRIL 1986: STATES AND TERRITORIES

	Pollution		*Other environmental problems*	
	Number	*Proportion (a)*	*Number*	*Proportion (a)*
	('000)	(per cent)	('000)	(per cent)
N.S.W.	158.8	3.8	179.3	4.3
Vic.	134.3	4.3	131.9	4.2
Qld	64.6	3.4	122.7	6.5
W.A.	28.9	2.8	49.7	4.7
S.A.	35.4	3.4	41.7	4.0
Tas.	10.0	3.0	15.1	4.6
N.T.	4.1	4.1	6.1	6.1
A.C.T.	6.2	3.4	11.3	6.2
Australia	**442.3**	**3.7**	**557.8**	**4.7**

(*a*) Percentages are expressed as proportions of civilian population 15 years and over excluding those persons for which no answer was obtained.

Recycling

The survey found that 34 per cent of households in Australia actively recycle glass and bottles. Participation is highest in South Australia with 51 per cent of households involved. 1.6 million households (29 per cent of all households) recycle paper, with the Australian Capital Territory (44 per cent) and Victoria (42 per cent) having the highest participation rates. On the other hand only 19 per cent of households recycle aluminium and steel cans. South Australia, with 33 per cent of households involved, again showed highest participation among States and Territories.

HOUSEHOLDS RECYCLING REFUSE: TYPE OF REFUSE, METHOD OF COLLECTION, STATES AND TERRITORIES

Refuse recycled and method of collection	*N.S.W.*	*Vic.*	*Qld*	*W.A.*	*S.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Australia*
			— number ('000) —						
Glass and bottles—									
taken to special area	156.9	217.4	141.1	100.1	166.7	43.0	*	26.0	851.7
collected from home	397.2	391.7	33.7	72.7	82.2	12.8	*	1.5	992.0
Total	*554.1*	*609.1*	*174.8*	*172.8*	*248.8*	*55.8*	*	*27.5*	*1,843.7*
Paper—									
taken to special area	105.3	166.7	40.8	43.5	45.2	9.0	*	18.0	429.9
collected from home	433.3	433.2	139.0	30.0	106.0	3.5	*	17.7	1,163.2
Total	*538.6*	*599.9*	*179.8*	*73.5*	*151.2*	*12.5*	*2.1*	*35.6*	*1,593.1*
Aluminium and steel cans—									
taken to special area	334.8	155.0	111.5	76.7	134.9	6.8	9.8	13.3	843.0
collected from home	77.9	56.5	23.0	20.5	26.7	2.2	*	1.5	209.6
Total	*412.7*	*211.5*	*134.5*	*97.2*	*161.6*	*9.0*	*11.1*	*14.9*	*1,052.6*
			— per cent —						
Glass and bottles—									
taken to special area	8.3	15.3	16.3	21.0	34.3	27.3	*	31.9	15.7
collected from home	20.9	27.6	3.9	15.2	16.9	8.1	*	1.8	18.3
Total	*29.1*	*42.9*	*20.2*	*36.2*	*51.3*	*35.5*	*	*33.8*	*34.0*
Paper—									
taken to special area	5.5	11.7	4.7	9.1	9.3	5.7	*	22.1	7.9
collected from home	22.8	30.5	16.0	6.3	21.8	2.2	*	21.7	21.4
Total	*28.3*	*42.2*	*20.8*	*15.4*	*31.1*	*7.9*	*5.2*	*43.7*	*29.3*
Aluminium and steel cans—									
taken to special area	17.6	10.9	12.9	16.1	27.8	4.3	24.3	16.4	15.5
collected from home	4.1	4.0	2.7	4.3	5.5	1.4	*	1.9	3.9
Total	*21.7*	*14.9*	*15.6*	*20.4*	*33.3*	*5.7*	*27.6*	*18.3*	*19.4*

Usage of national parks

Most national parks have been so designated under State national park legislation. For the purpose of the April 1986 survey, national parks were those listed as such in the Australian National Parks and Wildlife Service (ANPWS) *Occasional Paper No. 10—Nature Conservation Reserves in Australia (1984).*

National parks under Commonwealth jurisdiction comprise the three areas under the direct management of the ANPWS, a Commonwealth statutory authority, and Namadgi National Park within the Australian Capital Territory, managed by the A.C.T. Parks and Conservation Service. All other national parks are administered by parks services in the respective States and the Northern Territory.

PERSONS VISITING A NATIONAL PARK (*a*) TWELVE MONTHS ENDED APRIL 1986
STATES AND TERRITORIES

	Age group (years)						
	15–24	*25–34*	*35–44*	*45–54*	*55–64*	*65 and over*	*Total*
		—number ('000)—					
N.S.W.	330.4	386.0	318.9	181.2	138.9	92.8	1,448.2
Vic.	226.4	257.1	212.0	119.1	97.8	61.0	973.4
Qld	167.2	180.0	151.8	83.9	64.4	34.4	681.6
W.A.	103.6	119.5	101.6	57.8	37.0	25.8	445.4
S.A.	79.7	103.7	91.7	44.5	40.3	27.3	387.1
Tas.	19.0	21.9	17.6	10.1	6.7	4.8	80.1
N.T.	3.4	6.9	5.9	*	*	*	18.3
A.C.T.	18.9	22.9	18.4	8.8	3.7	2.3	75.0
Australia	**948.7**	**1,098.0**	**917.9**	**506.9**	**388.9**	**248.8**	**4,109.2**
		—per cent—					
N.S.W.	37.7	44.3	41.1	32.9	26.5	16.8	34.9
Vic.	32.4	39.0	36.7	29.0	25.3	14.6	30.9
Qld	39.7	44.2	42.3	34.7	28.9	14.2	36.0
W.A.	44.1	50.2	49.5	41.8	32.6	22.7	42.7
S.A.	35.7	47.5	48.6	33.5	29.7	19.4	37.3
Tas.	26.7	33.2	31.8	25.1	17.6	11.3	25.5
N.T.	12.9	23.0	25.4	*	*	*	18.2
A.C.T.	42.6	51.7	45.0	37.3	21.0	19.1	41.0
Australia	**36.5**	**43.3**	**41.2**	**32.7**	**26.9**	**16.3**	**34.6**

(*a*) Excludes national parks which form part of World Heritage Areas.

Commonwealth responsibility for environment and conservation

In Commonwealth legislation, environment includes all aspects of human surroundings, whether affecting individuals or social groupings. Thus the environmental responsibilities of the Government relate to a broad range of activities bearing on the protection, conservation and extension of environmental quality and amenity. These responsibilities are shared among many agencies of government although a special focus is provided by the Ministry of the Arts, Sport, the Environment, Tourism and Territories.

The Commonwealth is responsible for the environment of the Territories, for the environmental impacts of its agencies operating in the States, and for contributing to international environmental activities. The Commonwealth also plays a major role in the national co-ordination of environmental protection and conservation activities, and contributes substantively to environmental research, environmental education and information exchange.

National activities

National collaboration on environmental matters is facilitated through Commonwealth and State Ministerial councils and other advisory bodies, and through a variety of nationally co-ordinated activities and programs.

Australian Environment Council

The Australian Environment Council was established in 1972 by agreement between the Prime Minister and the State Premiers. The members of the Council are the Ministers responsible for environmental matters in each State, internal Territory and the Commonwealth Government. New Zealand and Papua New Guinea have observer status on the Council.

The Council provides a forum for consultation, co-operation and liaison on matters concerning environmental management and pollution control. These matters have included the control of emissions and noise from motor vehicles, the use and disposal of hazardous chemicals, noise control, water quality, air pollution, solid-waste management, the economics of pollution abatement policies and environmental impact assessment, coastal management, land use policy, biotechnology and climate changes induced by human activities.

Council of Nature Conservation Ministers

The Council of Nature Conservation Ministers was established in 1974 by agreement between the Prime Minister and State Premiers. It comprises Ministers with nature conservation responsibilities in each State, internal Territory and the Commonwealth Government as well as the Commonwealth Minister responsible for the Commonwealth Scientific and Industrial Research Organisation. New Zealand and Papua New Guinea have observer status on the Council.

The Council provides a forum for consultation, co-operation and liaison on matters relating to the conservation and management of Australia's flora and fauna. Specific matters considered by the Council have included trafficking in native animals and plants, culling of populations of native species, protection of endangered and threatened plants and animals, the control of diseases affecting or likely to affect natural ecosystems in Australia, ranger training, management of national parks, and identification of wilderness areas.

Australian Ionising Radiation Advisory Council

The Australian Ionising Radiation Advisory Council advises the government on matters such as fallout over Australia from nuclear weapons testing, health effects of exposure to ionising radiation, radioactive waste management, visits of nuclear powered warships, and licensing and regulation of nuclear activities.

National Conservation Strategy for Australia

Following the international launching of the World Conservation Strategy in 1980, the Commonwealth Government, all States and the Northern Territory agreed to co-operate in developing a National Conservation Strategy for Australia which would aim to achieve 'sustainable development'—that is, harmony between development and conservation of Australia's living resources and supporting ecosystems. After wide consultation with the States, non-government conservation groups, industry and the community, consensus was obtained on a strategy at a national conference held in June 1983.

The Commonwealth Government endorsed the National Conservation Strategy for Australia in June 1984. The Northern Territory and most State Governments have also endorsed the Strategy. Victoria and Western Australia have prepared State Conservation Strategies. In various ways, all governments have undertaken nature conservation activities consistent with the aims of the National Conservation Strategy.

National Tree Program

The National Tree Program aims to conserve and establish trees and associated vegetation for community and private benefit throughout Australia. The objectives of the program are to increase selectively rural tree cover, promote co-ordinated action by individuals, governments and the community generally to conserve, plant and regenerate trees, and to develop public awareness of the value of trees.

Links with the Community Employment Program enabled implementation of several major revegetation projects, particularly in rural areas. A national tree data base (TREDAT) has been established.

Rainforest conservation

The Federal Government agreed to provide $22.5 million over the two years to 1987–88 for a National Rainforest Conservation Program which will include, inter alia, studies of the tourism potential of certain rainforests and funding of interpretative and visitor facilities.

Australian Biological Resources Study

The Australian Biological Resources Study (ABRS) was established in 1973 to stimulate taxonomic and ecological studies of Australian flora and fauna through the provision of grants for research and publication. ABRS responsibilities include provision of advice on national taxonomic collections and establishment and maintenance of a national taxonomic data bank. Much of the work of the study is done in State museums, botanic gardens and herbaria which were established during the last century. CSIRO also carries out important research relating to flora and fauna.

Current major projects of ABRS include preparation of a 60 volume *Flora of Australia*, a 10 volume *Fauna of Australia*, compilation of a 70 volume *Zoological Catalogue of Australia* and establishment of data base exchange systems for museums and herbaria for biogeographic and taxonomic information.

Environment research

The Department undertakes studies into Australian environmental issues and produces annual reports on the state of the environment in Australia. The CSIRO, universities and State environment agencies also carry out studies which contribute to the development of policies for environment protection, conservation and management of natural resources.

Infoterra

The Department of the Arts, Sport, the Environment, Tourism and Territories is the Australian national focal point for INFOTERRA. INFOTERRA is an international information network, developed by the United Nations Environment Programme, to assist organisations and individuals in locating the sources of environmental information. The Department is also the INFOTERRA regional service centre for South East Asia and the South Pacific. Its function is to assist countries within the region and to improve their environmental information capability and service.

Control of environmental contaminants

Various programs are concerned with the control of environmental contaminants. Final plans are being made for a national chemicals notification and assessment scheme. The Environment Protection (Sea Dumping) Act controls dumping of wastes in marine waters. National capacity for monitoring air pollution is being strengthened through a national monitoring, data acquisition and archiving program being implemented in conjunction with the States. Other activities cover codes of practice for activities involving radioactive materials, waste management, monitoring of the marine environment, environmental noise and air pollution control strategies.

Voluntary conservation organisations

The Commonwealth Government makes grants annually to voluntary conservation organisations to assist them in their environmental awareness and education campaigns.

Statutory authorities

Australian National Parks and Wildlife Service—ANPWS

ANPWS is the principal adviser to the Commonwealth Government on national parks and wildlife. It works in close co-operation with other Commonwealth authorities and relevant State and Territory agencies. Responsibilities include nature conservation, wildlife management, national park planning and management, protection of cetaceans, creation of public awareness and involvement in conservation, preservation of the Australian national heritage and co-operation with Aboriginals in protecting wildlife and natural features.

Kakadu National Park—Northern Territory

The Park was extended in June 1987 and now covers 17,552 square kilometres in the Alligator Rivers Region approximately 200 kilometres east of Darwin. Following extensive public participation in its preparation, a new management plan came into operation on 14 November 1987. Substantial achievements have been made in the management of the Park.

Control of the feral water buffalo population has led to dramatic improvement in the condition of floodplain and wetland areas with consequent benefits to wildlife. Visitor facilities and access have been greatly improved with the development of three major camping areas and several less-formal camping areas, the construction of sealed roads to key features, and installation of facilities for the protection and interpretation of the renowned art sites of Ubirr (Obiri) and Nourlangie Rock. Approximately 130,000 people visited the Park in 1986.

Uluru (Ayers Rock-Mount Olga) National Park—Northern Territory

The Park covers an area of 132,566 hectares and is located approximately 300 kilometres south-west of Alice Springs. Current administrative arrangements for the park are dealt with under Aborginal heritage protection in this chapter. An estimated 169,000 persons visited the Park in 1986–87.

Great Barrier Reef Marine Park Authority

This Authority was established by the *Great Barrier Reef Marine Park Act 1975* which provides for the establishment, control, care and development of a marine park in the Great Barrier Reef Region. The Marine Park covers an area of 345,000 square kilometres representing 98.5 per cent of the region. Management of the Marine Park is a co-operative venture with Queensland Government agencies. The main strategy used in management of the Park is 'zoning'. Zoning plans separate potentially conflicting activities while allowing all reasonable uses and ensuring the long-term conservation of the Reef's ecosystem.

Supervising Scientist for the Alligator River Region

Special arrangements have been made for minimising the environmental impact of uranium developments in the Northern Territory. The Commonwealth has appointed a Supervising Scientist who has overall responsibility to ensure the protection and restoration of the environment of the Alligator Rivers Region from the effects of mining.

TRAVEL AND TOURISM

World Expo 88
Brisbane Australia ©
April - October

Australia's World Expo—1988

Australia's World Expo 88 is the first international exposition to be held in the southern hemisphere this century. The last was held in Melbourne in 1888 to mark the occasion of Australia's centenary.

The first exposition was held in 1851 in London and, thereafter, expos became an international tradition. Since 1851, 21 expositions have been held in cities all over the world, including Paris (1867), Philadelphia (1876), San Francisco (1915), Brussels (1958), Osaka (1970) and Vancouver (1986).

The International Bureau of Expositions (BIE) controls world expositions under a convention signed by 47 countries in Paris in 1928. Countries apply to the BIE for approval to hold expos, the BIE approves applications and lays down protocol for their conduct.

The benefits from hosting such expositions are substantial. With more than 30 countries and 20 corporations taking part in Australia's Expo in Brisbane, significant international attention will be generated and exhibitors will be given the opportunity to demonstrate their capabilities and achievements on the theme—'Leisure in the Age of Technology'.

It is expected that Australia's Expo will stimulate up to $1,000m in economic terms and create more than 14,000 jobs—5,200 directly and a further 8,800 in indirect employment.

The initial indication that 25 countries were to participate has been exceeded, and now more than 30 are involved, drawing an estimated 8 million visits (665,000 of these from overseas).

The participants include: Alaska, Australia, Canada, Cyprus, European Communities, Federal Republic of Germany, Fiji, France, Greece, Hawaii, Hungary, Indonesia, Italy, Japan, Kenya, Kobe City (Japan), Nepal, New Zealand, Papua New Guinea, People's Republic of China, Republic of Korea, Saitama Prefecture (Japan), San Marino, Seychelles, Solomon Islands, Switzerland, Thailand, Tonga, Union of Soviet Socialist Republics, United Kingdom, United States of America, Vanuatu and Western Samoa.

The 1988 World Exposition is held in Brisbane, the capital of Queensland, situated 400 kilometres south of the Tropic of Capricorn. The symbol of World Expo 88 is two boomerangs, back to back, forming an X, with one flowing out to form a P and an O, in the outline of XPO.

The Australian and Queensland Governments are co-hosts of the $600 million exposition. Expo is scheduled to run daily for six months from 30 April 1988. The array of displays, amusements, entertainment and exhibits is expected to ensure an average daily attendance of 48,000.

Overseas travel

Statistics about travellers to and from Australia are classified in the first instance by the actual or intended length of stay in Australia or abroad; this classification distinguishes between long-term and short-term movement.

Statistics of permanent and long-term movement are shown in Chapter 6, Demography.

Statistics of short-term arrivals and departures which are in the nature of travel statistics are given below.

Short-term movement: defined as comprising visitor arrivals and Australian resident departures where the intention of staying in Australia or abroad is for a period of less than twelve months, together with departures of visitors and returns of Australian residents who have stayed in Australia or abroad for less than twelve months.

Short-term movement excludes persons who arrive in and depart from Australia on the same ship's voyage or on the same flight (variously called 'direct transit' or 'through' passengers), or who change flights without leaving the airport's transit area; passengers on pleasure cruises commencing and finishing in Australia; and all crew. However, it includes persons who pass through the customs barrier and declare the purpose of their visit to Australia to be 'in transit'. Short-term visitors are more numerous than long-term visitors and have come to be regarded as 'tourists' by many users of the statistics.

SUMMARY OF SHORT-TERM TRAVELLER STATISTICS

	Overseas visitors		*Australian residents*	
	Arrivals in Australia	*Departures from Australia*	*Departures from Australia*	*Arrivals in Australia*
Annual average—				
1971–75	475,900	479,000	647,600	631,400
1976–80	684,700	655,400	1,077,300	1,062,100
1981–85	998,600	966,600	1,337,600	1,306,000
Year—				
1981	936,700	900,400	1,217,300	1,181,400
1982	954,700	921,500	1,286,900	1,259,600
1983	943,900	928,900	1,253,000	1,219,700
1984	1,015,100	985,800	1,418,600	1,374,700
1985	1,142,600	1,096,500	1,512,000	1,494,700
1986	1,429,400	1,363,800	1,539,600	1,513,200

In addition to the basic classification of travellers shown above, certain other characteristics are ascertained. These are: sex, age, marital status, country of citizenship, country of birth, intended or actual length of stay, purpose of journey, mode of transport, country of residence or where most time was or will be spent, country of embarkation or disembarkation, State of residence or where most time was or will be spent, and State of embarkation or disembarkation.

The categories shown in the previous table are cross-classified by various characteristics listed above and resulting statistics are shown in considerable detail in quarterly and annual publications. Certain unpublished information is available on request. Selected traveller statistics are shown in the following tables.

Short-term travel is subject to marked seasonal variation, December being the peak month for the arrival of overseas visitors and the departure of Australian residents.

SHORT-TERM MOVEMENT: ARRIVALS AND DEPARTURES OF OVERSEAS VISITORS AND AUSTRALIAN RESIDENTS BY MONTH OF ARRIVAL OR DEPARTURE, AUSTRALIA, 1986

(persons)

	Overseas visitors		*Australian residents*	
Month	*Arriving*	*Departing*	*Departing*	*Returning*
January	98,000	133,800	104,200	186,500
February	118,000	111,900	79,900	102,000
March	129,500	123,800	126,100	96,100
April	110,600	130,100	121,600	100,500
May	91,700	106,600	139,500	119,000
June	94,800	84,800	143,100	114,500
July	109,500	90,100	144,100	128,800
August	105,100	113,200	154,500	148,200
September	95,000	94,300	129,500	167,700
October	130,300	109,400	109,800	147,900
November	156,700	141,100	116,200	117,500
December	190,100	124,600	171,100	84,600
Total	**1,429,400**	**1,363,800**	**1,539,600**	**1,513,200**
Sea travellers as a percentage of total	0.85	0.69	0.29	0.34

SHORT-TERM MOVEMENT—DEPARTURES OF AUSTRALIAN RESIDENTS: STATED PURPOSE OF JOURNEY AND INTENDED LENGTH OF STAY, 1986 (*a*)

(persons)

	Main purpose of journey						
Intended length of stay	*Visiting relatives*	*Holiday, accompanying business traveller (b)*	*Convention*	*Business*	*Employment*	*Other and not stated*	*Total*
Under 1 week	5,700	24,500	3,900	42,900	2,600	7,400	87,000
1 week and under 2 weeks	22,500	256,300	13,700	51,500	1,900	13,400	359,300
2 weeks and under 3 weeks	32,000	212,400	7,100	34,800	1,500	10,800	298,600
3 weeks and under 1 month	32,300	93,500	3,000	19,400	900	5,700	154,800
1 month and under 2 months	88,500	139,000	4,300	28,600	2,800	9,800	273,000
2 months and under 3 months	53,000	68,800	1,000	8,900	1,700	5,600	139,000
3 months and under 6 months	47,900	60,300	300	6,400	2,800	7,100	124,700
6 months and under 9 months	15,500	21,500	*	3,300	3,300	4,900	48,600
9 months and under 12 months	8,400	17,800	*	2,600	5,300	5,600	39,800
Not definite, not stated	2,700	8,000	300	1,200	300	2,300	14,800
Total	**308,500**	**902,000**	**33,600**	**199,700**	**23,100**	**72,700**	**1,539,600**

(*a*) Asterisk (*) denotes that figures are subject to sampling variability too high for most purposes. (*b*) Includes Student vacation.

Expo 88, Brisbane.

Monorail at Expo 88.

Photos—Promotion Australia

Folkloric Festival, Sydney.

Radio telescope, Parkes, N.S.W.

Frill-necked Lizard.

Wombat.

Greater Glider.

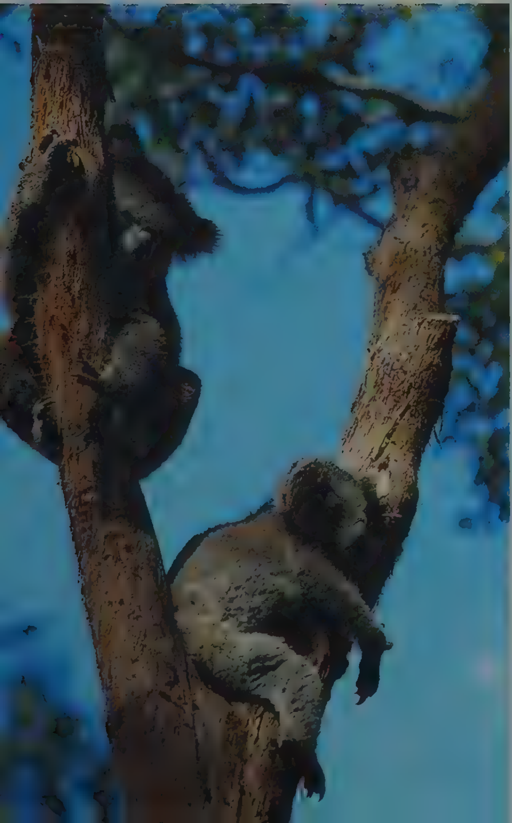
Photos—Promotion Australia

Echidna.

Red Kangaroos.

Penguins, Antarctica.

Koalas.



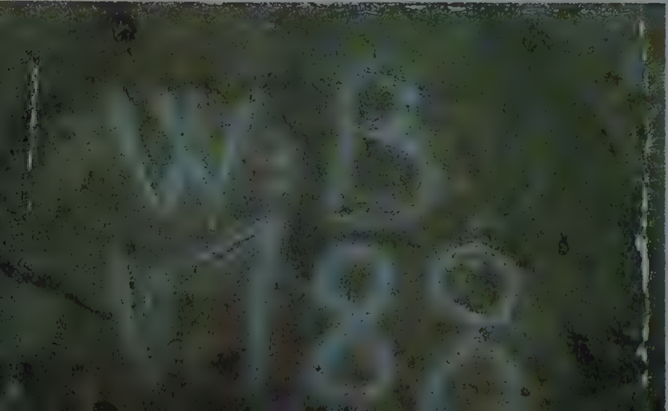
Kakadu National Park.

Surveying, Mt Newton, Antarctica.

Telegraph Station, Alice Springs.

Gwalia, gold mining ghost town in Western Australia.

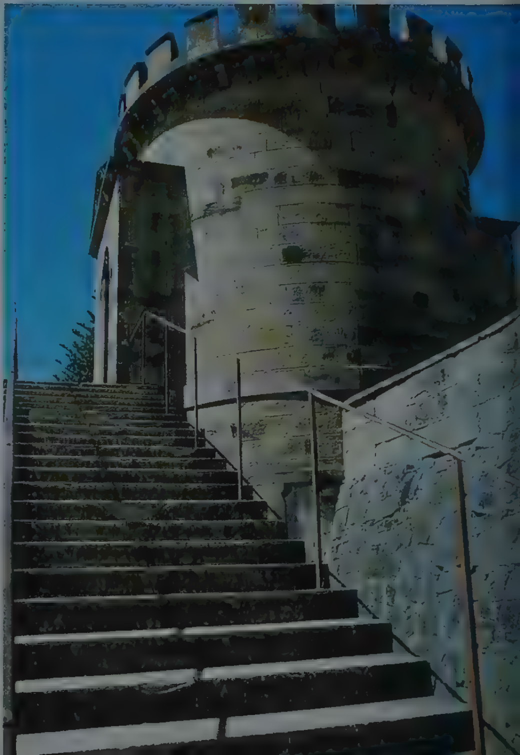
Initials of a crew member of *Sirius,* Garden Island.



Statue of Captain Arthur Phillip, founder of Australia, with Centrepoint Tower in the background.

Photos—Promotion Australia

Guard tower, Port Arthur, Tasmania.



SHORT-TERM MOVEMENT—ARRIVALS OF OVERSEAS VISITORS: STATED PURPOSE OF JOURNEY AND INTENDED LENGTH OF STAY, 1986 (*a*)

(persons)

	Main purpose of journey							
Intended length of stay	*In transit*	*Visiting relatives*	*Holiday, accompanying business traveller*	*Convention*	*Business*	*Employment*	*Other and not stated*	*Total*
Under 1 week	99,000	15,100	171,500	6,300	57,300	1,000	11,400	361,700
1 week and under 2 weeks . .	300	32,200	187,000	10,400	52,500	600	11,700	294,600
2 weeks and under 3 weeks . .	*	44,400	116,400	6,100	26,400	600	8,400	202,400
3 weeks and under 1 month . .	*	40,900	58,500	1,600	7,600	300	3,500	112,600
1 month and under 2 months .	*	88,500	83,400	1,500	12,000	1,100	7,900	194,400
2 months and under 3 months .	*	36,700	26,500	200	4,400	1,300	5,000	74,200
3 months and under 6 months .	*	37,100	27,900	100	4,300	3,200	8,800	81,400
6 months and under 9 months .	*	24,300	28,700	100	2,200	4,300	5,300	65,000
9 months and under 12 months .	*	5,000	6,300	*	1,700	6,900	11,000	30,900
Not definite, not stated . . .	*	1,900	3,300	200	1,100	400	5,500	12,200
Total	**99,400**	**326,000**	**709,500**	**26,500**	**169,600**	**19,700**	**78,600**	**1,429,400**

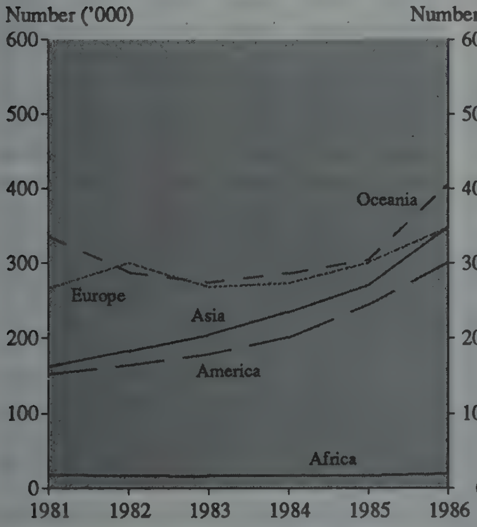
(*a*) Asterisk (*) denotes that figures are subject to sampling variability too high for most practical purposes.

In 1986 the majority of Australian residents departing for short-term visits abroad intended to stay for under one month, with 48 per cent intending to stay for under 3 weeks. The majority of short-term visitor arrivals to Australia intended to stay under three weeks, with 46 per cent intending to stay under 2 weeks.

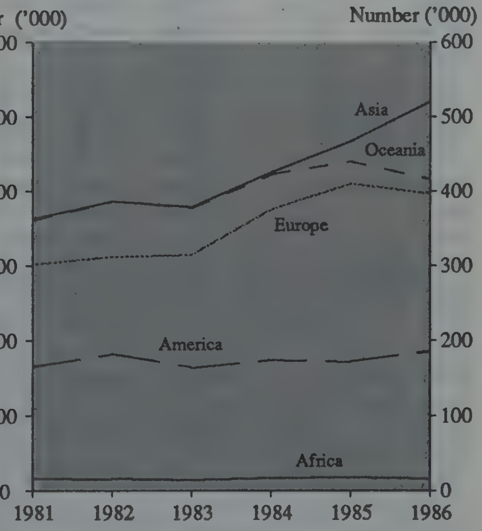
Statistics for Australian residents refer to their total time away from Australia; for overseas visitors they refer only to the Australian portions of their trips.

In the case of both Australian residents departing and overseas visitors arriving, the most common reason for visit was 'holiday', followed by 'visiting relatives' and 'business' as the second and third most common reasons.

VISITOR ARRIVALS, SHORT TERM, BY USUAL RESIDENCE



RESIDENT DEPARTURES, SHORT TERM, BY REGION OF INTENDED STAY



SHORT-TERM MOVEMENT: ARRIVALS OF OVERSEAS VISITORS AND DEPARTURES OF AUSTRALIAN RESIDENTS BY COUNTRY OF RESIDENCE/INTENDED STAY AND INTENDED LENGTH OF STAY, AUSTRALIA, 1986

	Arrivals of overseas visitors—intended length of stay					*Departures of Australian residents—intended length of stay*			
Country of residence (visitors) and country of intended stay (residents)	*Under 1 week*	*1 week and under 1 month*	*1 month and under 3 months*	*3 months and under 12 months*	*Total (a)*	*Under 1 month*	*1 month and under 3 months*	*3 months and under 12 months*	*Total (a)*
Africa—									
South Africa	1,700	4,800	4,400	1,600	12,500	1,500	3,000	1,000	5,600
Other	1,400	2,000	2,300	1,300	7,100	3,100	5,400	1,800	10,400
Total, Africa	*3,200*	*6,700*	*6,700*	*2,900*	*19,600*	*4,600*	*8,400*	*2,700*	*16,000*
America—									
Canada	7,000	20,300	12,100	7,300	47,000	6,200	9,600	5,100	21,000
U.S.A.	69,200	127,200	32,700	14,900	245,300	80,600	46,600	17,300	145,600
Other	2,300	3,500	1,600	1,800	9,500	6,700	8,000	4,100	19,000
Total, America	*78,400*	*150,900*	*46,400*	*24,000*	*301,700*	*93,400*	*64,200*	*26,600*	*185,600*
Asia—									
Hong Kong	6,300	19,400	5,100	2,400	33,500	101,900	12,300	4,300	119,300
India	1,500	2,200	1,400	1,600	6,900	5,700	8,300	3,200	17,300
Indonesia	4,200	7,300	3,600	2,300	17,700	92,600	8,100	2,800	104,400
Japan	81,500	53,200	4,100	5,600	145,600	20,000	4,100	2,200	26,500
Malaysia	6,900	16,700	8,300	6,500	38,600	26,200	11,000	4,000	41,600
Philippines	2,500	3,200	2,400	2,900	11,200	18,400	9,800	1,600	30,000
Singapore	12,700	23,400	6,200	2,400	45,000	71,600	6,100	2,600	80,800
Thailand	2,500	3,200	1,100	1,100	8,000	28,300	4,500	1,500	34,600
Other	12,100	14,700	8,200	7,400	43,000	30,600	18,300	15,900	65,700
Total, Asia(b)	*130,200*	*143,400*	*40,300*	*32,300*	*349,500*	*395,300*	*82,400*	*38,000*	*520,200*
Europe—									
France	3,300	4,900	3,500	2,100	13,900	3,300	7,700	3,200	14,300
Germany(*c*)	6,600	11,900	15,900	7,000	41,900	6,300	13,500	5,300	25,300
Greece	1,000	700	1,600	2,900	6,400	2,100	11,600	17,200	31,600
Ireland(*d*)	300	1,200	2,600	3,200	7,400	700	3,800	1,500	6,000
Italy	2,300	5,000	5,500	4,200	17,300	4,400	19,900	14,400	39,300
Netherlands	1,900	3,900	6,700	3,300	15,900	2,200	7,600	3,400	13,300
Switzerland	3,000	4,600	5,500	3,600	16,900	2,000	3,900	1,600	7,500
United Kingdom	17,300	52,200	65,400	40,300	176,000	29,800	115,700	57,100	204,500
Yugoslavia	400	500	1,500	3,800	6,400	700	6,800	9,600	17,300
Other	5,700	14,000	11,800	13,500	45,400	5,400	18,100	13,600	37,500
Total, Europe	*41,900*	*99,000*	*120,000*	*83,900*	*347,500*	*56,900*	*208,500*	*126,900*	*396,700*
Oceania—									
Fiji	3,500	3,700	3,800	2,200	13,300	72,000	3,500	1,200	77,300
New Caledonia	2,500	5,900	1,700	800	11,100	9,300	400	200	10,000
New Zealand	84,500	184,100	40,900	25,600	336,700	210,500	34,900	9,000	256,300
Papua New Guinea	13,000	10,200	5,700	2,800	31,900	15,100	4,800	5,800	25,800
Other	4,000	4,700	2,300	1,900	13,200	40,000	3,600	1,900	46,000
Total, Oceania	*107,500*	*208,600*	*54,400*	*33,300*	*406,200*	*346,900*	*47,200*	*18,000*	*415,400*
Other	600	1,000	800	800	5,000	2,600	1,400	900	5,800
Total	**361,700**	**609,600**	**268,600**	**177,300**	**1,429,400**	**899,700**	**412,100**	**213,100**	**1,539,600**

(*a*) The difference between the sum of the components and the total comprises 'not definite, not stated, etc.' (*b*) Asia includes countries which are frequently regarded as 'Middle East' countries, for example Iraq, Lebanon, Syria, etc. This inclusion is based on United Nations' classification of world regions. (*c*) Comprises the German Democratic Republic and the Federal Republic of Germany. (*d*) Includes Republic of Ireland and Ireland, undefined.

Survey of International Visitors—IVS

Surveys of the travel pattern and attitudes of international visitors to Australia have been conducted on behalf of the Australian Tourist Commission for a number of years (annually between 1983 and 1986). No survey was conducted for 1987 but it is expected to be reintroduced for 1988.

Details contained in the survey include the arrival statistics, profile, itinerary, trip satisfaction and expenditure of short-term visitors to Australia (defined as foreign residents staying in Australia for a period of less than twelve months).

Domestic travel

Information about domestic travel patterns of residents within Australia in 1985–86 was collected in the Domestic Tourism Monitor, commissioned by the Australian Standing Committee on Tourism and Conducted by McNair Anderson. The survey results show that the main purposes of trips were holiday or pleasure (50%), visiting friends and relatives (26%), and conference, seminar, business (11%). The main mode of transport used was private vehicle (81%). The mean length of a trip by domestic tourists was 4.5 nights in 1985–86.

The following tables contain data obtained from the survey.

SUMMARY OF PERSON TRIPS AND NIGHTS AWAY, 1985–86

State of origin	*Estimated average of population ('000)*	*Person trips ('000)*	*Person-trips per person*	*Nights away by persons ('000)*	*Nights away per person*	*Nights away per person trip*
New South Wales	4,248.5	15,852.0	3.7	69,085.0	16.3	4.4
Victoria	3,203.9	10,005.0	3.1	37,854.0	11.8	3.8
Queensland	1,937.3	8,863.0	4.6	48,660.0	25.1	5.5
South Australia	1,067.9	3,541.0	3.3	16,290.0	15.3	4.6
Western Australia	1,078.0	4,356.0	4.0	21,917.0	20.3	5.0
Tasmania	337.1	1,219.0	3.6	6,288.0	18.7	5.2
Northern Territory	100.9	307.0	3.0	3,270.0	32.4	10.7
Australian Capital Territory	190.1	999.0	5.3	4,119.0	21.7	4.1
Not stated	..	65.0	..	272.0	..	..
Total	**12,163.7**	**45,206.0**	**3.7**	**207,755.0**	**17.1**	**4.6**

Source: McNair Anderson, Domestic Tourist Monitor, 1985–86

NUMBER OF NIGHTS SPENT IN STATE OF MAIN DESTINATION BY MAIN PURPOSE OF TRIP, 1985–86
('000 nights)

	Main purpose of trip				
State of main destination	*All business*	*Pleasure/ Holiday*	*Visiting friends/ relatives*	*Other*	*Total*
New South Wales	6,659	35,912	18,663	7,850	69,085
Victoria	3,766	18,699	10,995	4,394	37,854
Queensland	5,519	26,196	11,291	5,653	48,660
South Australia	1,833	7,551	4,220	2,687	16,290
Western Australia	3,538	10,411	4,333	3,635	21,917
Tasmania	846	3,190	1,546	705	6,288
Northern Territory	496	1,569	442	763	3,270
Australian Capital Territory	823	1,160	1,522	614	4,119
Not stated	..	58	215	..	..
Total	**23,481**	**104,745**	**53,226**	**26,303**	**207,755**

Source: McNair Anderson, Domestic Tourist Monitor, 1985–86

Tourism

As a country, Australia offers domestic and international travellers a wide variety of tourist attractions. Its temperate climate and natural features of tropical forests, mountain ranges, pastoral regions and beaches provide a sharp contrast to the isolated outback, desert regions and attractions of an historical nature. Its major cities offer cultural and recreational pursuits and modern accommodation and convention and meeting facilities.

Australia is seen increasingly as an exciting but safe tourist destination in an environment of economic, political and social stability among a warm, friendly and hospitable people.

Economic and social importance

Tourism in Australia is now recognised as an industry and an area of government policy concern in its own right.

A Bureau of Industry Economics report (BIE 1984) revealed that tourism is of major significance to the Australian economy. It estimated that tourism accounts for 4.8 per cent of Australia's Gross Domestic Product (GDP) and is responsible for employing 5.2 per cent of the workforce (equivalent to the textiles, clothing, footwear and motor vehicle industries combined). In 1981–82, the gross expenditure by domestic and overseas travellers in Australia was estimated to total almost $12,700 million. Estimates by the Department of the Arts, Sport, the Environment, Tourism and Territories put the 1986–87 total tourism expenditure at $22,300 million, with the level of direct and indirect employment created by this expenditure being estimated at 405,000.

The tourism industry is likely to undergo further expansion in the future, because of factors which include increasing general levels of affluence, increasing leisure time arising from shorter working hours and early retirement, saturation of demand for consumer durables, and improvements in the quality of facilities and services available to travellers.

In the context of these developments, both the Commonwealth and State Governments have become increasingly aware of the importance of tourism as an instrument of government policy and their respective roles in this field have expanded accordingly. Governments have in particular recognised the potential of tourism to stimulate economic growth and generate employment opportunities.

Allocation of tourism responsibilities within the public sector

In broad terms the Commonwealth Government is responsible for international aspects of tourism development and the formulation and implementation of relevant national policies.

The State and Territory governments, in conjunction with local government, bear responsibility for the provision of public infrastructure and facilities and other more specific, localised services and regulations. Other responsibilities with broad implications or significance are shared between Federal, State and Territory Governments.

Commonwealth activity

The Department of the Arts, Sport, the Environment, Tourism and Territories has been involved in a range of policy, administrative and consultative activities designed to encourage the efficient development of tourism in Australia in co-operation with the industry and with Commonwealth and State/Territory Government departments.

Major functions of the Department include:

- formulating proposals, transmitting advice to the Minister on industry issues, administrating the Australian Tourist Commission Act, conducting research into the tourism and travel industries, providing secretarial support to a number of consultative councils and committees, and providing liaison with international tourism organisations.

Specific mechanisms exist to achieve these objectives through consultation and liaison. These include the following:

- The *Tourist Ministers' Council* (TMC), which was established in 1959 and comprises the Commonwealth, State and Territory Ministers responsible for tourism.
- The *Australian Standing Committee on Tourism* (ASCOT), which comprises representation from the Department, the Australian Tourist Commission and the State and Territory Directors of Tourism or their equivalent.
- The *Tourism Research Committee* (TRC), which undertakes research as directed by ASCOT, comprises research officers from the Department, the Australian Tourist Commission and the State and Territory authorities responsible for tourism.
- The *Tourism Advisory Council* (TAC), which is chaired by the Minister for the Arts, Sport, the Environment, Tourism and Territories and includes senior representatives from the tourism industry and trade unions; and
- The *National Tourism Industry Training Committee* (NTITC), a tripartite body of representatives from industry, union and government, concerned with promoting, developing and co-ordinating training in tourism.

The Department is also responsible for Australia's bilateral and multilateral tourism relations and contributes to the development of international tourism through Australia's membership of the following:

- The *World Tourism Organization* (WTO), an agency of the *United Nations Development Program* (UNDP), which examines all sectors of tourism on a world-wide basis. Australia has been a full member of the WTO since September 1979 and is currently chairing WTO's Regional Commission for East Asia and the Pacific (CAP).
- The *Tourism Committee of the Organisation for Economic Co-operation and Development* (OECD). The Committee promotes co-operation between member countries in the field of tourism through examining issues such as transportation, energy, accommodation, employment, investment and profitability in the light of changing economic conditions.
- The *Economic and Social Commission for Asia and the Pacific* (ESCAP), a regional commission of the UN Economic and Social Council concerned with economic and social development (including tourism development) in member countries.

Australian Tourist Commission

The Australian Tourist Commission was established in 1967. It is a statutory authority and has the role of encouraging visits to Australia by people from other countries. The Commission was subject to a wide-ranging review in 1986 and was restructured in 1987. It now uses the trading name Tourism Australia. It had a staff of 90 worldwide and a budget allocation of $29 million in 1986–87.

The Commission engages in a wide variety of marketing activities including consumer and trade advertising, industry seminars and familiarisation visits for travel agents, journalists and photographers. Funding increases in recent years have enabled it to expand its worldwide activities and, in particular, to undertake a major enhanced awareness campaign in the United States. A domestic tourism campaign aimed at encouraging Australians to see more of their own country was commenced in 1984.

The Commission has its head office in Sydney and overseas offices in Auckland, London, Frankfurt, New York, Los Angeles, Tokyo, Singapore, Toronto, Chicago, Milan, Osaka and Hong Kong.

Tourism industry

The tourism industry incorporates a wide range of activities. These include, principally, the travel, accommodation, catering, hospitality, retail, and meetings and conventions as well as many other sectors of industry. The industry has been identified as a growth area, offering attractive opportunities for investment in tourism development projects and as a major employer of labour.

Tourism has a higher than average labour intensity and has considerable potential for providing employment for certain groups (such as unskilled and semi-skilled workers) who are otherwise vulnerable to unemployment. There are also opportunities for the employment of other groups such as women and part-time workers who cannot, or prefer not to, work conventional working hours.

As a way of heightening awareness of the Australian tourism product and to encourage excellence in the industry, an annual series of National Tourism Awards was inaugurated in September 1984.

Tourism Overseas Promotion Scheme—TOPS

The Tourism Overseas Promotion Scheme (TOPS), which was announced on 19 June 1985, provides for the payment of taxable grants to Australian tourism operators to encourage them to attract increasing numbers of overseas tourists to Australia. The grant rate under TOPS is 70 cents in the dollar of eligible expenditure incurred in approved promotional activities.

The Scheme is funded by the Commonwealth Government and provides assistance to the tourism industry to replace the tourism provisions formerly incorporated in the Export Market Development Grants Scheme.

Consumer protection

Overseas and domestic tourists are now being given greater consumer protection when dealing with travel agents following the introduction by several State and Territory governments of a licensing system for all travel agents, and the establishment of a National Compensation Fund. Under these arrangements compensation is available to consumers in participating States and Territories through the Fund, which has been established with contributions from travel agents. Licensing criteria cover financial performance, minimum experience/qualifications for managers and defined standards for premises.

Tourist accommodation

Services industries surveys

Data relating to accommodation enterprises are being collected as part of the 1986–87 surveys. Results will be published towards the end of 1988.

Surveys of tourist accommodation establishments

Quarterly accommodation surveys were commenced in the September Quarter 1975 and data published from these surveys include room occupancy and takings from accommodation.

The main purpose of the surveys of tourist accommodation establishments is to measure the utilisation of available tourist accommodation. For detailed statistics from the survey *see Tourist Accommodation, Australia* (8635.0).

TOURIST ACCOMMODATION (*a*)

		September quarter 1985	*December quarter 1985*	*March quarter 1986*	*June quarter 1986*	*September quarter 1986*	*December quarter 1986*
LICENSED HOTELS WITH FACILITIES(*b*)							
Establishments	Number	1,062	1,085	1,106	1,106	1,119	1,108
Guest rooms	"	34,964	36,460	36,740	37,664	39,808	41,415
Bed spaces	"	85,784	90,170	92,834	95,113	100,888	104,865
Room occupancy rates	%	55.9	55.8	56.5	53.9	55.1	55.4
Bed occupancy rates	%	35.3	34.9	35.7	32.4	34.0	34.3
Gross takings from accommodation	$'000	103,516	110,320	115,690	116,125	133,257	147,164
MOTELS, ETC.(*b*)							
Establishments	Number	2,867	2,880	2,911	2,915	2,955	3,015
Guest rooms	"	74,399	74,998	76,504	77,207	77,544	78,666
Bed spaces	"	221,828	223,817	227,630	230,734	232,626	235,947
Room occupancy rates	%	58.6	56.4	59.2	56.6	58.0	55.9
Bed occupancy rates	%	35.7	33.9	38.0	33.9	35.5	33.7
Gross takings from accommodation	$'000	169,744	164,289	181,464	176,098	190,515	186,590
TOTAL							
Establishments	Number	3,929	3,965	4,017	4,021	4,074	4,123
Guest rooms	"	109,363	111,458	113,244	114,871	117,352	120,081
Bed spaces	"	307,612	313,987	320,464	325,847	333,514	340,812
Room occupancy rates	%	57.7	56.2	58.3	55.7	57.0	55.8
Bed occupancy rates	%	35.6	34.2	37.4	33.5	35.0	33.9
Gross takings from accommodation	$'000	273,260	274,608	297,154	292,223	323,772	333,754
CARAVAN PARKS(*b*)							
Establishments	Number	1,878	1,888	1,898	1,902	1,916	1,915
Powered sites	"	141,595	143,165	144,106	144,660	145,599	144,706
Unpowered sites	"	62,704	62,304	62,362	62,936	63,878	63,004
Cabins, flats, etc.	"	4,098	4,343	4,314	4,494	4,846	5,134
Total capacity	"	*208,397*	*209,812*	*210,782*	*212,090*	*214,323*	*212,844*
Site occupancy rates	%	21.3	24.0	32.1	22.2	21.4	23.8
Gross takings from accommodation	$'000	32,726	38,723	48,682	34,919	35,472	41,873

(*a*) For the purposes of this survey, a tourist accommodation establishment is defined as an establishment which predominantly provides short term accommodation (i.e. for periods of less than two months) available to the general public. (*b*) For definitions *see Tourist Accommodation, Australia* (8635.0).

The 1985–86 Domestic Tourism Monitor indicated that the main types of accommodation used were homes of friends or relatives (46%), hotels or motels (16%) and caravan parks or camping grounds (16%). The following table classifies the main type of accommodation used by the main purpose of the trip.

NUMBER OF PERSON TRIPS BY MAIN TYPE OF ACCOMMODATION AND MAIN PURPOSE OF TRIP, 1985–86
('000 person trips)

Main type of accommodation	*Main purpose of trip*				
	All business	*Pleasure/ holiday*	*Visiting friends/ relatives*	*Other*	*Total*
Hotel/motel with facilities	3,224	3,648	557	990	8,419
Hotel/motel without facilities	322	421	63	179	985
Friends' relatives' house	1,273	5,936	11,154	2,377	20,740
Caravan/tent/cabin/camping	309	5,128	355	695	6,487
Rented house/flat	159	1,335	129	183	1,806
Own holiday home/flat	110	1,550	66	251	1977
Guest house/private hotel	162	318	45	50	575
Other/not stated	1,071	1,268	394	1,484	4,217
Total	**6,630**	**19,604**	**12,763**	**6,209**	**45,206**

Source: McNair Anderson, Domestic Tourism Monitor, 1985-86

Major tourism projects

Based on information provided by the State/Territory tourism authorities, the Department of the Arts, Sport, the Environment, Tourism and Territories has estimated that, at the end of June 1987, there were some $3,564 million of major tourism projects under construction and another $5,441 million of projects firmly committed to commence construction within eighteen months thereafter.

Commencements of tourist accommodation and resorts in the 1986–87 financial year were valued at $799 million and it is estimated these projects will provide about 17,565 man-years of employment during construction and, when operational, require employment of around 4,220 permanent full and part-time staff.

Vocational training

1986 saw greater priority being given to the issue of training within the tourism and hospitality industry. The Federal Government established a committee to discuss ways of implementing the recommendations made by the Tourism Training Review Group in its 1985 report on tourism training in Australia. The committee has provided a strategic framework for training in all sectors of the tourism industry and detailed immediate and longer-term needs and action required to meet them.

Steel regions assistance

In 1986–87, $2 million was allocated to support the growth of tourism in the economically depressed Hunter and Illawarra steel regions of New South Wales. This is part of an on-going program for federally funded infrastructure projects in these regions which will provide up to $18 million to 1987–88 for tourism projects.

Foreign investment

During 1986–87 there was a substantial relaxation of foreign investment guidelines making it easier for foreigners to invest in Australia. As a general rule, while proposals for foreign investment in tourism ventures still need to be notified to the Foreign Investment Review Board, they are now approved unless they are contrary to the national interest. The previous requirement for 50 per cent Australian equity has been removed. This change has stimulated significantly increased activity in overseas investment in the tourism industry, particularly from Japan.

AUSTRALIA'S NATIONAL ESTATE

(*This special article has been contributed by the Australian Heritage Commission*)

Australians' concern for their environment

In August 1974 the Government-appointed Committee of Inquiry into the National Estate reported to Federal Parliament that uncontrolled development, economic growth and 'progress' to that time had had a very detrimental effect on Australia's national estate. Its report called for prompt action and public education to prevent further neglect and destruction. The Committee's report was a synthesis of a broad collection of the views and attitudes of Australian citizens towards their environment.

The inquiry received more than 650 submissions—from all levels of government, national trusts and nature conservation organisations, professional associations, trade unions and individuals. Members of the Committee travelled around Australia following up points raised in submissions, holding public meetings and talking to people.

One interesting finding of the inquiry was that Australians across a wide socio-economic range expressed concern for the environment. Conservation emerged as an important issue. To quote a paragraph from the report:

> The Conservation of the National Estate is the concern of everyone. The forces which threaten it directly affect the quality of life of the less privileged urban people, whose access to and enjoyment of parkland, coast and natural bushland, of familiar and pleasant urban city-scapes, and sometimes their own dwellings, are endangered. Often it is these less privileged who are initiating and supporting action to preserve the best features of our present way of life . . .

Australian Heritage Commission

On a recommendation of the Committee of Inquiry, the Australian Heritage Commission was established. Its enabling legislation was passed in July 1975 with the support of all political parties.

The Commission's role is to advise the Federal Government on the protection of the national estate. In summary, its responsibilities are to:

- prepare and maintain a register of national estate places;
- advise the Minister of the Arts, Sport, the Environment, Tourism and Territories on all matters relating to the national estate;
- develop policies and programs for research, professional training and public education.

Protecting the national estate

The major work of the Australian Heritage Commission has been the development of the Register of the National Estate.

The term 'national estate', coined by the Welsh architect William Clough Ellis in the 1940s and later used by U.S. President John Kennedy, is a very broad-ranging concept. In the legislation, the national estate is defined as:

> . . . those places, being components of the natural environment of Australia, or the cultural environment of Australia, that have aesthetic, historic, scientific or social significance or other special value for future generations as well as for the present generation.

It thus consists of all those places which have been identified as worth keeping and handing on to future generations. Such places include wildlife habitats, natural ecosystems, landscapes of great beauty, grand buildings and structures, humble dwellings, work places, ruins, sites of historic events and Aboriginal places such as dreaming tracks, rock art sites, ceremonial and archaeological sites. Portable objects, such as paintings and works of art are not included.

Protecting the national estate requiries a partnership of government at all levels—Commonwealth, State and local. It also requires the involvement of the voluntary conservation organisations, community groups, educational institutions and individuals.

Places in the Register of the National Estate

In June 1986 there were 7,974 places listed in the Register of the National Estate and another 281 on the interim list. The largest proportion of these places are historic buildings although some of the places listed for their natural significance, for example, national parks, may cover very large areas and may have historic or Aboriginal sites within them. The table shows the current distribution of national estate listed places across Australia.

THE REGISTER OF THE NATIONAL ESTATE
AT 30 JUNE 1986

State		*Built*	*Aboriginal*	*Natural*	*Total*
N.S.W.	Reg. (*a*)	2,143	125	239	2,507
	IL (*b*)	47	10	7	64
	Total	*2,190*	*135*	*246*	*2,571*
Vic.	Reg.	1,303	89	162	1,554
	IL	6	—	—	6
	Total	*1,309*	*89*	*162*	*1,560*
Qld	Reg.	424	54	205	683
	IL	27	27	8	62
	Total	*451*	*81*	*213*	*745*
S.A.	Reg.	599	103	288	990
	IL	16	1	12	29
	Total	*615*	*104*	*300*	*1,019*
W.A.	Reg.	648	38	193	879
	IL	5	7	9	21
	Total	*653*	*45*	*202*	*900*
Tas.	Reg.	966	21	139	1,126
	IL	3	9	23	35
	Total	*969*	*30*	*162*	*1,161*
N.T.	Reg.	51	44	43	138
	IL	6	23	9	38
	Total	*57*	*67*	*52*	*176*
A.C.T.	Reg.	53	8	17	78
	IL	23	1	2	26
	Total	*76*	*9*	*19*	*104*
External Territories	Reg.	5	—	14	19
	IL	—	—	—	—
	Total	*5*	—	*14*	*19*
Totals	*Reg.*	*6,192*	*482*	*1,300*	*7,974*
	IL	*133*	*78*	*70*	*281*
Grand total		**6,325**	**560**	**1,370**	**8,255**

(*a*) Reg. = Registered (includes all places in this status group)
(*b*) IL = Interim List (includes all places in this status group)

Most of these listed places fall into one or several of the following categories:

In the natural environment: national parks, nature reserves and other places for the protection of native fauna and flora; the coastline and islands; inland water expanses, rivers, lakes and other wetlands; special landforms, geological features, caves, forests, woodlands, grasslands; areas of scientific interest.

In the cultural environment: Aboriginal rock art sites, ceremonial grounds and sacred sites; Aboriginal quarries and shell mounds, campsites and fishtraps; important historical and archaeological sites (both Aboriginal and European); historic buildings and structures, either individual or in groups; historic towns and precincts.

The better known and more widely accepted National Estate places, like the Great Barrier Reef, Uluru (Ayers Rock), Kosciusko National Park, the Sydney Harbour Bridge, the Sydney Opera House, the Australian War Memorial, the historic Tasmanian town of Richmond, the cathedrals of Adelaide and the historic port of Fremantle, are found in the national inventory alongside smaller scale and more humble places, like memorial drinking fountains, graveyards and cemeteries, ruins, railway bridges and even historic or Aboriginal carved trees.

There are no gradings between different categories of places and all registrations have the same status.

The Register of the National Estate is an open-ended inventory. New places can be added to it as they are assessed as having National Estate value. Places can be taken off it if for some reason they lose their value, for example, historic buildings after major modification.

The function of the Register of the National Estate is to provide the basis for the development of programs to identify, protect and enhance the National Estate. It also provides a focus and direction for funding under the Federal Government's National Estate Grants Program. Approximately $30 million has been allocated since the program was set up.

Although most of the places that would be expected to be found on the Register are now included, the Commission is still receiving a large number of nominations each year.

The effects of listing

Under the *Australian Heritage Commission Act 1975*, registration imposes some constraints on the actions of Commonwealth Ministers and authorities. Section 30 of the Act provides that Commonwealth Ministers and agencies must not take any action which would adversely affect any places in the Register unless there is no feasible and prudent alternative, or unless all action is taken to minimise damage where there is no such alternative.

The Commission has no power over the actions of State or local governments, or private owners that may affect a place in the Register of the National Estate.

Public education and training for conservation

The Commission has a statutory obligation to heighten awareness of the value of the National Estate, and of issues affecting it.

It is implementing a comprehensive information/education program which includes a wide range of publications, the use of films and television, displays and exhibitions, the running of seminars and workshops to enhance understanding about the National Estate.

The Commission has established contact with voluntary conservation movements and government agencies that have the potential to publicise the national estate, for example, Australia Post, Promotion Australia and the Australian Broadcasting Commission. It also has instigated a number of heritage projects with commercial enterprise.

The World Heritage Convention

In August 1974, Australia became one of the first countries to ratify the International Convention for the Protection of the World Cultural and National Heritage (The World Heritage Convention). This Convention was adopted by the General Assembly of UNESCO in 1972 and came into force in 1975. It has now been signed by more than eighty countries.

The Convention aims to ensure international co-operation for the safeguarding of the globe's irreplaceable heritage. This co-operation is vital in a world with population and energy pressures, technological change and industrialisation, and changing boundaries and economic circumstances.

The World Heritage Convention requires State Parties (i.e. countries who are signatories to the Convention) to adopt general policies, to establish appropriate organisations and services and to develop suitable legal, technical, scientific and financial measures for the protection, conservation and the preservation of their natural and cultural heritage.

State Parties are also required to submit an inventory of property suitable for the World Heritage List. This list is being compiled to ensure that places of 'outstanding universal value' are recognised and protected.

Australia's World Heritage properties

Six Australian places have been assessed by the World Heritage Committee as being of 'outstanding universal value' and are now inscribed on the UNESCO World Heritage List.

They are the Great Barrier Reef, the Lord Howe Island Group, Kakadu National Park, the Willandra Lakes Region, the Western Tasmania Wilderness National Parks and the Australian East Coast Temperate and Sub-tropical Rainforest Parks.

These properties now take their place on a list including such places as the Pyramid Fields of Egypt, the Historic Centre of Rome, the Palace and Park of Versailles, Kathmandu Valley, Grand Canyon National Park and the Rock-hewn Church of Ivanovo. Only six of the places have been inscribed for both their cultural and natural significance, three of which are Australian (Kakadu, Willandra and South West Tasmania).

The Great Barrier Reef, a maze of reefs and islands stretching 2,000 kilometres along the Queensland coast and covering some 35 million hectares, is the largest coral reef system in the world and the richest in biological diversity.

The Lord Howe Island Group includes Lord Howe Island, the spectacular Ball's Pyramid, adjacent islets to the south and the Admiralty Islands to the north, and the coral reefs of the area. Its value derives from its unique landform and its diverse and largely intact ecosystems.

The Willandra Lakes Region, covering some 6,000 square kilometres in far western New South Wales, provides outstanding evidence of the antiquity of modern man, of the life and culture of early Aboriginal societies, and an unrivalled record of past environments and landscapes.

Kakadu National Park is of universal significance for its landform, its variety of flora and fauna and its rich legacy of Aboriginal art and occupation sites. The Park is located in the Alligator Rivers Region of Arnhem Land in the Northern Territory and contains extensive wetlands.

The Western Tasmanian Wilderness National Parks cover 770,000 hectares of one of the last great temperate wilderness areas in the world. Archaeological excavations in the area have uncovered evidence that shows humans were occupying the area 20,000 years ago, at the height of the last glaciation.

The Australia East Coast Temperate and Sub-tropical Rainforests Parks are rainforest areas in coastal New South Wales. They include two types of cool temperate rainforest, a major part of Australia's warm temperate rainforest and a sample of sub-tropical rainforest types. The areas show the evolutionary history of rainforest in this part of the world and also provide the habitats for populations of many rare and endangered species.

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CHAPTER THIRTEEN

AGRICULTURAL INDUSTRIES

This chapter is divided into the following major parts:—Introduction; Sources of statistics and definitions of units; Structural statistics (provides data on the legal arrangements, size and industry class of the business organisations operating within the agricultural sector); Value of agricultural commodities produced and index of values at constant prices; Apparent consumption of foodstuffs and nutrients; Land tenure and utilisation; Crop statistics; Livestock statistics; Livestock products; Agricultural improvements, employment, regulation of agricultural industries, and the agricultural research activities of the Commonwealth Scientific and Industrial Research Organisation (CSIRO).

A special article, contributed by the Division of Water Resources Research, CSIRO, is included at the end of the chapter.

Introduction

The development of Australian agricultural industries has been determined by interacting factors such as profitable markets, the opening up of new land (including the development of transport facilities) and technical and scientific achievements. Subsistence farming, recurring gluts, low prices and losses to farmers were gradually overcome by the development of an export trade. Profitable overseas markets for merino wool and wheat, and the introduction of storage and refrigerated shipping for the dairying and meat industry, combined to make the agricultural sector Australia's main export earner. Until the late 1950s, agricultural products comprised more than 80 per cent of the value of Australia's exports. Since then, the proportion of Australia's exports from the agricultural sector has declined markedly.

However, this decline in importance has been due not to a decline in agricultural activity but rather to an increase in the quantity and values of the exports of the mining and manufacturing sectors. In fact, the agricultural sector experienced an increase in total output over that period. One interesting aspect of this increase in output is that it was accompanied by a large reduction in the size of the agricultural labour force, implying a large growth in productivity within the sector.

Sources of statistics and definitions of units

The major source of the statistics in this chapter is the Agricultural Census conducted at 31 March each year. A wide range of information is collected from agricultural establishments with agricultural activity covering the physical aspects of agriculture such as area and production of crops, fertilisers used, number of livestock disposed of, etc. In conjunction with the Census, certain supplementary collections are conducted in some States where this has proved expedient, e.g. where the harvesting of certain crops has not been completed by 31 March (apples, potatoes, etc.), special returns covering the crops concerned are collected after the completion of the harvest.

The ABS excludes from the Census those establishments which make only a small contribution to overall agricultural production. Thus the 1985–86 Census includes establishments with agricultural activity which had, or were expected to have, an estimated value of agricultural operations of $2,500 or more. In previous years, the value cut off was applied at the enterprise level—for 1981–82 the value was $2,500 and for earlier years, $1,500.

While these changes have resulted in some changes in the counts of numbers of establishments appearing in publications, the effect on the statistics of production of major commodities is small. Statistics of minor commodities normally associated with small scale operations may be affected to a greater extent.

Details of the method used in the calculation of the estimated value of agricultural operations are contained in the publication *Agricultural Industries: Structure of Operating Units, Australia* (7102.0).

Integrated Register Information System—IRIS

Details of agricultural units for 1985–86 have been derived from IRIS. Details of the structure of economic units engaged in agriculture, in hierarchical order, are:

- **Enterprise** (the second level of economic unit). The enterprise is that unit comprising all operations in Australia of a single operating legal entity. (The term 'single legal entity' means a sole trader, partnership, company, trust, co-operative or estate in the private sector, or a department, local government authority or statutory authority in the government sector). For the agricultural sector, a 'multi-State enterprise' is an enterprise which belongs to an enterprise group which undertakes agricultural activities in more than one State.
- **Establishment** (the smallest economic unit). The establishment covers all operations carried out by one enterprise at a single physical location.

Other statistical collections

The ABS conducts a number of other collections to obtain agricultural statistics. These include collections from wool brokers and dealers, livestock slaughterers and other organisations involved in the marketing and selling of agricultural commodities.

For financial statistics from the Agricultural Finance Survey, last conducted for 1980–81, *see Year Book* No. 69, page 250, or *Agricultural Industries: Financial Statistics, Australia, 1980-81* (7507.0).

Structural statistics

The following tables provide information relating to the structure of operating units during 1984–85. Although the definitions of the operating units have been provided above, the following terminology is also used:

- **Industry.** As set out in the *Australian Standard Industrial Classification* (ASIC) (1201.0 and 1202.0). These publications provide details of the methodology used in determining the industry class of an economic unit.
- **Estimated Value of Agricultural Operations** (**EVAO**). This is determined by valuing the physical crop and livestock information collected in the Agricultural Census.

A further explanation of this terminology and more detailed statistics are given in the publication *Agricultural Industries: Structure of Operating Units, Australia* (7102.0).

NUMBER OF UNITS BY TYPE OF UNIT

Year/unit	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
1982–83—									
Agricultural establishments	52,952	46,661	33,764	19,840	16,471	5,702	238	103	175,731
Establishments with agricultural activity	53,705	47,167	34,036	20,119	16,809	5,840	246	103	178,025
Agricultural enterprises					—n.a.—				
Non-agricultural enterprises operating agricultural establishments					—n.a.—				
1983–84—									
Agricultural establishments	52,704	45,560	33,948	19,289	16,584	5,586	253	101	174,025
Establishments with agricultural activity	53,011	45,984	34,167	19,479	16,750	5,664	255	102	175,412
Agricultural enterprises					—n.a.—				
Non-agricultural enterprises operating agricultural establishments					—n.a.—				
1984–85—									
Agricultural establishments	51,786	45,032	33,614	18,915	16,341	5,384	265	104	171,441
Establishments with agricultural activity	52,116	45,452	33,836	19,191	16,626	5,470	265	105	173,061
Agricultural enterprises	50,209	44,000	32,271	18,439	15,177	5,211	234	85	(*a*)165,970
Non-agricultural enterprises operating agricultural establishments	584	462	343	153	283	114	3	2	(*a*)2,088

(*a*) Includes 'Multi-state' enterprises, i.e. enterprises which operated establishments in more than one State or Territory.

AGRICULTURAL ESTABLISHMENTS: INDUSTRY AND ESTIMATED VALUE OF AGRICULTURAL OPERATIONS: 1984–85

ASIC Code	*Industry of establishment*	*Estimated value of agricultural operations ($'000)*											
	Description	*Less than 9*	*10–19*	*20–29*	*30–39*	*40–49*	*50–59*	*60–74*	*75–99*	*100–149*	*150–199*	*200 and more*	*Total*
A	Agriculture, Forestry, Fishing and Hunting—												
01	Agriculture—												
0124	Poultry for meat	18	27	26	38	45	55	81	111	108	58	107	674
0125	Poultry for eggs	55	40	26	35	31	27	43	56	102	98	432	945
0134	Grapes	463	589	563	600	554	428	478	391	244	67	88	4,465
0135	Plantation fruit	152	317	272	243	198	125	161	173	155	65	104	1,965
0136	Orchard and other fruit	1,299	984	655	562	503	387	446	557	659	340	548	6,940
0143	Potatoes	61	82	123	112	97	129	154	197	264	141	226	1,586
0144	Vegetables (except potatoes)	585	658	506	393	313	226	257	332	404	232	595	4,501
0181	Cereal grains (incl. oilseeds n.e.c.)	802	1,057	944	934	940	944	1,437	2,293	3,155	1,966	4,744	19,216
0182	Sheep—cereal grains	331	823	1,078	1,335	1,458	1,526	2,342	3,613	4,781	2,585	3,804	23,676
0183	Meat cattle—cereal grains	325	503	480	398	336	246	338	452	534	270	392	4,274
0184	Sheep—meat cattle	1,162	1,348	1,150	925	759	678	819	871	965	484	694	9,855
0185	Sheep	3,467	3,198	2,503	2,042	1,854	1,533	1,867	2,100	2,273	998	1,174	23,009
0186	Meat cattle	12,502	7,226	3,489	2,056	1,274	848	940	1,003	934	472	928	31,672
0187	Milk cattle	507	957	1,419	2,225	2,835	2,474	2,984	2,667	1,894	524	310	18,797
0188	Pigs	291	281	227	191	174	128	183	229	307	160	362	2,533
0191	Sugar cane	38	115	221	478	703	793	949	1,088	968	384	292	6,029
0192	Peanuts	4	17	24	27	36	30	47	64	74	27	43	393
0193	Tobacco	—	1	4	16	28	32	92	187	188	46	37	631
0194	Cotton	—	4	2	4	1	4	4	9	34	46	395	503
0195	Nurseries	242	285	247	168	94	281	104	139	235	91	259	2,145
0196	Agriculture n.e.c.	3,311	1,530	820	529	356	255	215	221	191	87	117	7,632
	Total (ASIC code 01)	*25,615*	*20,042*	*14,779*	*13,311*	*12,589*	*11,149*	*13,941*	*16,753*	*18,469*	*9,141*	*15,651*	*171,440*
02	Services to agriculture	49	48	20	10	9	5	5	6	2	4	1	159
03	Forestry and logging	14	9	3	1	1	1	1	2	2	1	1	36
04	Fishing and hunting	8	2	3	—	1	—	—	—	1	—	—	15
	Total (ASIC Division A)	*25,686*	*20,101*	*14,805*	*13,322*	*12,600*	*11,155*	*13,947*	*16,761*	*18,474*	*9,146*	*15,653*	*171,650*
B	Mining	8	4	1	2	1	—	—	—	—	2	—	18
C	Manufacturing	52	37	24	16	9	7	13	9	8	5	25	205
D	Electricity, Gas and Water	—	—	—	—	1	—	1	—	—	—	1	3
E	Construction	108	74	24	22	7	5	7	10	7	2	—	266
F	Wholesale and Retail Trade	95	61	39	19	14	18	11	5	16	3	11	292
G	Transport and Storage	105	72	36	22	20	9	2	12	3	4	3	288
H	Communication	—	—	—	—	—	—	—	—	—	—	—	—
I	Finance, Property and Business Services	30	18	5	5	3	2	—	1	—	2	—	66
J	Public Administration and Defence	—	1	—	—	—	—	1	1	—	—	—	3
K	Community Services	24	10	14	7	10	5	12	16	19	15	35	167
L	Recreation, Personal and Other Services	47	23	9	9	5	3	2	2	2	—	—	102
	Total, all industries	**26,155**	**20,401**	**14,957**	**13,424**	**12,670**	**11,204**	**13,996**	**16,817**	**18,529**	**9,179**	**15,728**	**173,060**

AGRICULTURAL ESTABLISHMENTS(*a*) INDUSTRY: 1984–85

ASIC Code	Industry of establishment Description	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	Aust.(*b*)
A	Agriculture, Forestry, Fishing and Hunting—							
01	Agriculture—							
0124	Poultry for meat	320	128	95	69	46	15	674
0125	Poultry for eggs	325	198	183	97	111	25	945
0134	Grapes	707	1,865	127	1,568	189	7	4,465
0135	Plantation fruit	978	1	876	—	105	—	1,965
0136	Orchard and other fruit	2,054	1,234	1,160	1,527	666	290	6,940
0143	Potatoes	171	592	180	125	172	346	1,586
0144	Vegetables (except potatoes)	956	745	1,271	734	562	215	4,501
0181	Cereal grains (incl. oilseeds n.e.c.)	5,087	4,005	3,998	3,114	2,972	31	19,216
0182	Sheep—cereal grains	8,564	4,904	434	4,699	4,971	103	23,676
0183	Meat cattle—cereal grains	1,571	442	2,065	128	47	16	4,274
0184	Sheep—meat cattle	3,738	3,082	689	930	791	606	9,855
0185	Sheep	8,307	7,246	1,372	2,609	2,286	1,149	23,009
0186	Meat cattle	10,586	7,710	9,349	871	1,896	1,051	31,672
0187	Milk cattle	3,036	10,120	2,603	1,302	620	1,109	18,797
0188	Pigs	799	414	713	284	202	119	2,533
0191	Sugar cane	520	—	5,508	—	1	—	6,029
0192	Peanuts	2	—	390	—	1	—	393
0193	Tobacco	31	224	376	—	—	—	631
0194	Cotton	277	—	226	—	—	—	503
0195	Nurseries	773	442	445	183	232	60	2,145
0196	Agriculture n.e.c	2,984	1,680	1,554	675	471	242	7,632
	Total (ASIC code 01)	*51,786*	*45,032*	*33,614*	*18,915*	*16,341*	*5,384*	*171,441*
02	Services to agriculture	12	58	28	20	39	2	159
03	Forestry and logging	9	4	9	1	6	7	36
04	Fishing and hunting	—	1	1	4	7	2	15
	Total (ASIC division A)	*51,807*	*45,095*	*33,652*	*18,940*	*16,393*	*5,395*	*171,651*
B	Mining	4	5	4	3	2	—	18
C	Manufacturing	36	36	27	49	52	5	205
D	Electricity, Gas and Water	—	2	—	1	—	—	3
E	Construction	39	98	24	53	39	13	266
F	Wholesale and Retail Trade	81	71	33	50	41	16	292
G	Transport and Storage	80	75	23	43	42	25	288
H	Communication	—	—	—	—	—	—	—
I	Finance, Property and Business Services	13	14	6	26	6	1	66
J	Public Administration and Defence	2	—	—	1	—	—	3
K	Community Services	33	14	58	11	38	12	167
L	Recreation, Personal and Other Services	21	42	9	14	13	3	102
	Total, all industries	**52,116**	**45,452**	**33,836**	**19,191**	**16,626**	**5,470**	**173,061**

(*a*) Includes establishments with an EVAO of less than $3,000. (*b*) Includes the Northern Territory and the Australian Capital Territory.

Value of agricultural commodities produced and index of values at constant prices

Definitions

Gross value of commodities produced: the value placed on recorded production at the wholesale prices realised in the market place.

Marketing costs: include freight, cost of containers, commission and other charges incurred in marketing.

Local value of commodities produced: the value placed on commodities at the place of production and is ascertained by deducting marketing costs from the gross value.

Index of values at constant prices: the index of the gross value of commodities produced at constant prices, i.e. it is a measure of change in value after the direct effects of price changes have been eliminated.

VALUES OF AGRICULTURAL COMMODITIES, 1985–86

	Gross value of agricultural commodities produced	*Marketing costs*	*Local value of commodities produced*	*Index of values at constant prices of agricultural commodities produced (a) (Base year: 1979–80=1000)*
	$m	$m	$m	
Crops	7,377.7	1,140.4	6,237.3	1,170
Livestock slaughterings and other disposals	3,882.8	299.6	3,583.2	973
Livestock products	4,130.9	206.3	3,924.6	1,131
Total agriculture	**15,398.0**	**1,646.6**	**13,751.7**	**1,100**

(*a*) Weighted by average unit values for the year 1979–80.

Publications

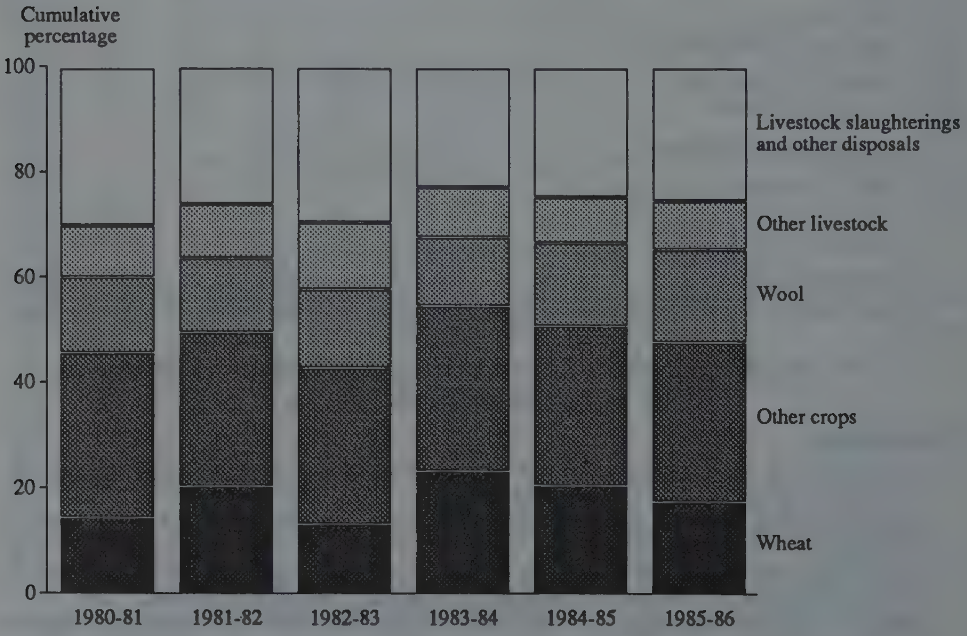
Two preliminary estimates of value of commodities produced are published: *Value of Principal Agricultural Commodities Produced, Australia, Preliminary* (7501.0) and *Value of Selected Agricultural Commodities Produced, Australia, Preliminary* (7502.0). A final publication, *Value of Agricultural Commodities Produced, Australia* (7503.0), contains Indexes of Values at Constant Prices.

Index of Agricultural Commodities Produced

The index is consistent in scope with those of previous years. The indexes are weighted by the average unit values for the year 1979–80 with a reference base of 1979–80=1000.

For further details on how these and earlier series were calculated *see Year Book* No. 61, and *Value of Agricultural Commodities Produced, Australia* (7503.0).

PERCENTAGE OF TOTAL GROSS VALUE OF AGRICULTURAL COMMODITIES AUSTRALIA



GROSS VALUE OF AGRICULTURAL COMMODITIES PRODUCED

($ million)

	1980–81	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*
Crops—						
Barley for grain	380.9	463.4	290.8	732.6	759.3	586.8
Oats for grain	139.5	155.7	116.1	203.8	129.6	138.3
Wheat for grain	1,684.1	2,599.4	1,566.2	3,605.6	3,202.9	2,719.4
Other cereal grains	327.6	294.1	260.4	408.7	400.8	346.3
Sugar cane cut for crushing	799.7	590.2	508.9	516.6	512.2	494.2
Fruit and nuts	459.8	464.4	498.0	552.5	670.9	678.6
Grapes	178.2	222.8	212.5	217.0	259.4	270.0
Vegetables	509.0	554.3	556.9	738.6	628.8	713.6
All other crops (*a*)	827.2	967.6	1,000.5	1,451.1	1,303.5	1,430.5
Total crops	*5,305.9*	*6,311.9*	*5,010.3*	*8,426.5*	*7,867.4*	*7,377.7*
Livestock slaughterings and other disposals (*b*)—						
Cattle and calves (*c*)	2,056.5	1,890.1	2,076.2	2,118.0	2,253.2	2,367.3
Sheep and lambs	718.9	646.7	548.0	585.0	576.1	518.0
Pigs	337.5	396.1	414.9	375.5	438.1	438.3
Poultry	361.4	362.7	413.1	430.2	512.6	559.1
Total livestock slaughterings and other disposals	*3,474.3*	*3,295.6*	*3,452.2*	*3,508.6*	*3,783.3*	*3,882.8*
Livestock products—						
Wool	1,669.5	1,788.7	1,760.9	2,016.1	2,434.4	2,707.0
Milk	885.1	1,033.9	1,186.5	1,153.2	1,035.4	1,106.7
Eggs	227.4	253.4	275.3	295.2	283.7	289.7
Total livestock products (d)	*2,803.8*	*3,100.6*	*3,245.8*	*3,489.8*	*3,785.3*	*4,130.9*
Total value of agricultural commodities produced	**11,584.1**	**12,708.2**	**11,708.3**	**15,424.9**	**15,436.1**	**15,398.0**

(*a*) Includes pastures and grasses cut for hay and harvested for seed. Excludes crops for green feed or silage. (*b*) Includes net exports of livestock. (*c*) Includes dairy cattle slaughtered. (*d*) Includes honey and beeswax.

INDEX OF VALUES AT CONSTANT PRICES OF AGRICULTURAL COMMODITIES PRODUCED(*a*)

(Base year: 1979–80 = 1,000)

	1979–80	*1980–81*	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*
Crops—							
Barley for grain	1,000	724	932	524	1,321	1,500	1,315
Oats for grain	1,000	799	1,146	603	1,627	999	957
Wheat for grain	1,000	663	1,017	545	1,374	1,166	1,008
Other cereal grains	1,000	1,233	1,417	975	1,563	1,485	1,420
Sugar cane (*b*)	1,000	1,120	1,162	1,192	1,070	1,167	1,152
Fruit and nuts	1,000	1,069	988	1,017	968	1,118	1,127
Grapes	1,000	825	984	963	994	1,030	1,067
Vegetables	1,000	1,011	1,056	1,044	1,123	1,289	1,273
All other crops (*c*)	1,000	964	1,106	931	1,400	1,671	1,622
Total	*1,000*	*838*	*1,053*	*763*	*1,290*	*1,266*	*1,170*
Livestock slaughterings and other disposals—							
Cattle and calves (*d*)	1,000	938	1,005	986	860	837	885
Sheep and lambs	1,000	1,032	946	1,018	936	997	1,072
Pigs	1,000	1,061	1,038	1,087	1,154	1,185	1,223
Poultry	1,000	968	893	1,000	952	1,103	1,171
Total (e)	*1,000*	*968*	*988*	*1,002*	*907*	*919*	*973*
Livestock products—							
Wool	1,000	990	1,012	995	1,026	1,170	1,176
Milk	1,000	947	956	1,011	1,089	1,109	1,105
Eggs	1,000	959	927	961	935	866	874
Total (f)	*1,000*	*974*	*990*	*995*	*1,035*	*1,128*	*1,131*
Total agricultural commodities produced	**1,000**	**909**	**1,019**	**889**	**1,115**	**1,128**	**1,100**

(*a*) Indexes of values at constant prices (weighted by average unit values of the year 1979-80). (*b*) Sugar cane cut for crushing and planting. (*c*) Includes pastures and grasses. Excludes crops for green feed or silage. (*d*) Includes dairy cattle slaughtered. (*e*) Component series based on carcass weight. (*f*) Includes honey and beeswax.

Apparent consumption of foodstuffs and nutrients

Estimates of consumption in Australia are compiled by deducting net exports from the sum of production and imports and allowing for recorded movement in stocks of the respective commodities. The term 'consumption' is used in a specialised sense, since the quantities actually measured are broadly the quantities available for consumption at a particular level of distribution, i.e. ex-market, ex-store or ex-factory depending on the method of marketing and/or processing. Because consumption of foodstuffs is measured, in general, at 'producer' level no allowance is made for wastage before they are consumed. The effect of ignoring wastage is ultimately to overstate consumption but it is believed that more efficient distribution and storage methods in recent years have cut down wastage. Furthermore, it is likely that many of the foodstuffs are being supplemented by householders' self-supplies over and above the broad estimate already made.

The estimates of consumption per capita have been obtained by using the mean resident population for the period.

More detailed information on the consumption of foodstuffs is contained in the publication *Apparent Consumption of Foodstuffs and Nutrients, Australia* (4306.0). For some commodities, more timely information is contained in the publication *Apparent Consumption of Selected Foodstuffs, Australia (Preliminary)* (4315.0).

APPARENT PER CAPITA CONSUMPTION OF FOODSTUFFS

(Kg—unless otherwise indicated)

Commodity	*1980–81*	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*
Meat and meat products—						
Meat (carcass equivalent weight)						
Beef	44.5	47.3	42.4	39.9	40.0	39.3
Veal	2.5	2.6	3.5	2.4	2.1	2.1
Beef and veal	*47.0*	*49.8*	*45.9*	*42.3*	*42.1*	*41.4*
Lamb	15.8	16.3	16.2	16.9	17.0	16.9
Mutton	4.9	3.5	4.5	5.2	6.6	7.1
Pigmeat (*a*)	15.6	15.1	15.3	16.4	16.4	17.0
Total	*83.3*	*84.7*	*81.7*	*80.9*	*82.9*	*82.3*
Offal and meat, n.e.i.	4.2	4.4	4.4	3.4	2.8	2.7
Total meat and meat products	**87.5**	**89.1**	**86.1**	**84.3**	**85.0**	**85.0**
Poultry—						
Poultry (dressed weight)	20.3	19.6	20.3	20.0	21.8	23.0
Seafood—						
Fresh and frozen (edible weight)—						
Fish—						
Australian	1.8	1.6	1.2	1.7	1.8	2.2
Imported	1.7	1.1	1.5	1.8	1.9	1.8
Crustacea and molluscs	1.1	1.0	1.1	0.8	0.9	0.7
Seafood otherwise prepared (product weight)—						
Australian	0.4	0.4	0.6	0.6	0.4	0.5
Imported—						
Fish	1.8	1.9	1.5	2.0	1.9	1.8
Crustacea and molluscs	0.4	0.5	0.4	0.4	0.5	0.5
Total seafood	**7.2**	**6.5**	**6.3**	**7.3**	**7.4**	**7.5**
Milk and Milk Products—						
Market milk (fluid whole) (litres)	104.0	103.1	102.9	101.6	101.8	102.5
Condensed, concentrated and evaporated milk—						
Full cream sweetened	0.9	0.6	0.9	0.7	0.7	} 2.8
Full cream unsweetened	2.7	2.4	1.8	2.2	2.0	
Skim	1.0	1.2	0.8	0.9	1.2	0.9
Powdered milk—						
Full cream	0.9	0.9	0.8	0.7	0.7	0.6
Skim	3.2	2.8	2.7	2.3	2.3	2.3
Infants' and invalids' food	1.0	1.3	1.2	1.2	1.0	1.2
Cheese (natural equivalent weight)	6.6	7.0	7.4	7.7	8.1	8.0
Total (converted to milk solids, fat and non-fat)	**23.2**	**23.0**	**22.7**	**22.5**	**22.7**	**22.6**

APPARENT PER CAPITA CONSUMPTION OF FOODSTUFFS—*continued*

(Kg—unless otherwise indicated)

Commodity	*1980–81*	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*
Fruit and Fruit Products—						
Fresh fruit (incl. fruit for fruit juice)—						
Citrus	39.2	36.4	47.9	51.2	45.3	40.8
Other	35.5	37.8	39.6	38.1	41.4	42.1
Jams, conserves, etc	1.5	1.8	1.8	1.8	2.1	1.9
Dried fruit	2.2	2.3	2.5	2.4	3.0	2.9
Processed fruit	11.9	10.3	9.4	9.8	11.1	8.0
Total (fresh fruit equivalent)	**99.9**	**97.4**	**110.6**	**113.3**	**114.6**	**106.9**
Vegetables—						
White potatoes	54.9	57.6	52.2	62.6	59.9	57.7
Other root and bulb vegetables	16.3	18.7	16.9	17.4	19.3	18.9
Tomatoes	15.7	16.7	16.5	18.6	19.6	16.9
Leafy and green vegetables	21.8	20.8	21.4	21.9	22.5	22.8
Other vegetables	17.5	17.1	17.9	18.3	21.0	20.0
Total (fresh equivalent weight)	**126.3**	**130.8**	**124.9**	**138.8**	**142.4**	**136.2**
Grain Products—						
Flour (*b*)	70.7	72.0	67.1	73.1	72.6	71.8
Breakfast foods—						
Oatmeal and rolled oats	0.9	0.9	1.2	1.3	1.3	1.5
Other (from grain)	6.9	7.1	7.6	7.9	8.2	n.a.
Total breakfast foods	*7.8*	*8.0*	*8.7*	*9.2*	*9.6*	*n.a.*
Table rice	2.9	2.9	3.0	3.3	3.7	3.7
Total grain products	**81.4**	**82.9**	**78.8**	**85.6**	**85.8**	**n.a.**
Bread	46.1	47.5	49.3	45.6	45.4	n.a.
Eggs and Egg Products—						
Equivalent number of eggs(*c*)	220	222	141	140	137	134
Nuts (in shell)—						
Peanuts	1.5	1.5	2.1	1.8	1.4	1.6
Tree nuts	3.0	3.3	3.2	3.6	3.8	3.8
Oils and fats—						
Butter	4.3	4.3	4.0	3.9	3.9	3.8
Table margarine	6.7	6.8	6.8	6.9	6.6	6.9
Other margarine	2.5	2.7	2.8	2.7	2.3	2.1
Total margarine	*9.2*	*9.5*	*9.6*	*9.6*	*9.0*	*9.0*
Total (fat content) (*d*)	**21.5**	**21.8**	**21.6**	**21.5**	**21.0**	**21.0**
Sugar—						
As refined sugar	13.7	12.5	12.0	11.5	10.0	8.2
In manufactured foods	35.0	34.8	34.0	32.4	34.2	36.8
Total	*48.7*	*47.2*	*46.0*	*43.9*	*44.2*	*45.0*
Honey	0.7	0.9	0.8	0.9	0.7	0.8
Total (*e*)	**52.7**	**51.5**	**49.6**	**49.0**	**49.1**	**49.9**
Beverages—						
Tea	1.5	1.6	1.4	1.5	1.4	1.4
Coffee (*f*)	1.9	1.9	2.0	2.1	2.0	1.6
Aerated and carbonated waters (litres)	67.6	64.2	65.7	63.0	67.3	73.0
Beer (litres)	129.3	128.6	121.6	117.8	114.5	115.5
Wine (litres)	18.2	19.1	19.7	20.4	21.3	21.6
Spirits (litres alcohol)	1.1	1.2	1.2	1.1	1.2	1.2

(*a*) Includes bacon and ham. (*b*) Includes flour used for breadmaking. (*c*) Data from 1982–83 consists of commercial disposals only. (*d*) Includes an estimate for vegetable oils and other fats. (*e*) Includes sugar content of syrups and glucose. (*f*) Coffee and coffee products in terms of roasted coffee.

Nutrients

The nutrients table has been compiled by the Nutrition Section of the Commonwealth Department of Community Services and Health and is based on the estimates of the quantity of foodstuffs available for per capita consumption.

For further information on the level of nutrient intake *see* the publication *Apparent Consumption of Foodstuffs and Nutrients, Australia* (4306.0).

ESTIMATED SUPPLY OF NUTRIENTS AVAILABLE FOR CONSUMPTION (*a*)

(per capita per day)

(*Source*: Department of Community Services and Health)

Nutrient	*Unit*	*1980–81*	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*
Protein—							
Animal	g	65.1	65.0	64.1	62.9	64.3	64.7
Vegetable	g	32.6	33.2	32.2	34.7	34.4	34.1
Total	g	*97.7*	*98.2*	*96.3*	*97.6*	*98.7*	*98.8*
Fat (from all sources)	g	146.2	148.0	145.9	146.3	146.0	146.7
Carbohydrate	g	400.0	399.9	386.3	405.7	407.5	404.6
Calcium	mg	922	917	914	912	924	914
Iron	mg	14.7	15.0	14.9	15.1	15.3	15.2
Vitamin A activity	μg	1,492	1,510	1,496	1,446	1,400	1,367
Vitamin C (*b*)—							
Unadjusted	mg	106.0	105.0	114.0	122.0	119.0	112.0
Adjusted	mg	78.0	77.0	88.0	93.2	90.8	83.8
Thiamin (*b*)—							
Unadjusted	mg	1.8	1.8	1.8	1.9	1.9	1.9
Adjusted	mg	1.5	1.5	1.5	1.6	1.6	1.6
Riboflavin	mg	2.6	2.6	2.6	2.6	2.6	2.6
Niacin (*b*)—							
Unadjusted	mg	22.2	22.5	22.7	23.0	23.2	23.2
Adjusted	mg	38.6	38.9	38.7	39.3	39.7	39.7
Energy value	kJ	14,390	14,471	14,125	14,458	14,506	14,497

(*a*) Figures are based on conversion factors calculated from the revised and enlarged edition of S. Thomas and M. Corden *Metric Tables of Composition of Australian Foods*, Canberra, 1977. (*b*) Data show adjustments made for loss of nutrients in cooking and the extra niacin obtained from the metabolism of protein.

Land tenures

Land tenure statistics mainly relate to land held under freehold tenure ('alienated or in process of alienation') or leasehold tenure ('leased or licenced') with all agricultural establishments falling within these categories. Descriptions of the land tenure systems of the States and the Territories, and conspectuses of land legislation in force were provided in *Year Book* No. 48 and *Year Book* No. 50.

Disposal of Crown lands

For a description of the provisions that exist in all mainland States for the disposal of Crown lands for public purposes, for unconditional purchase and occupation under lease or licence, *see Year Book* No. 61.

Closer settlement and war service settlement

Particulars of these are given in issues of the *Year Book* up to No. 22, and in *Year Book* Nos. 48, 55 and 61.

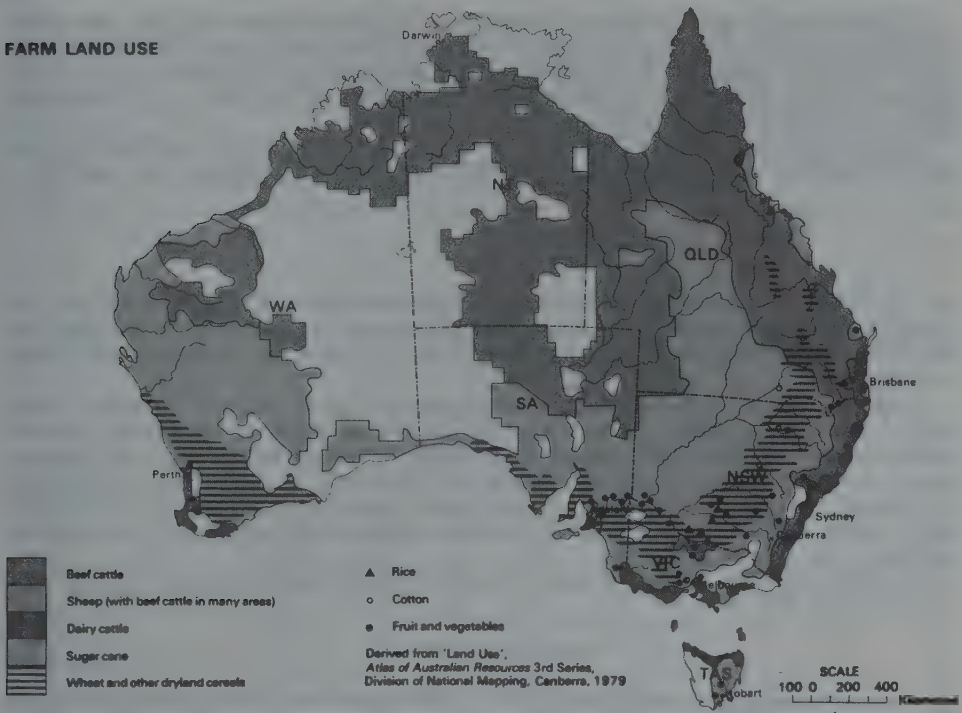
Alienation and occupation of Crown lands

For data relating to land tenures in the States and Territories, *see Year Book* No. 66 and *Year Book* No. 67.

Land utilisation in Australia

The total area under tenure differs from the total area of agricultural establishments (shown in the following table) by amounts which represent unused land or land held for non-agricultural purposes. In general, land in the more fertile regions tends to be mostly freehold, while the less productive land is held under Crown lease or licence.

FARM LAND USE


Darwin
NT
QLD
WA
SA
Brisbane
Perth
NSW
Sydney
Canberra
VIC
Melbourne
TAS
Hobart
Beef cattle
Sheep (with beef cattle in many areas)
Dairy cattle
Sugar cane
Wheat and other dryland cereals
▲ Rice
○ Cotton
● Fruit and vegetables
SCALE
100 0 200 400
Kilometres

Derived from 'Land Use', *Atlas of Australian Resources* 3rd Series, Division of National Mapping, Canberra, 1979

AREA OF ESTABLISHMENTS WITH AGRICULTURAL ACTIVITY
(million hectares)

At 31 March	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas*	*N.T.*	*Aust. (incl. A.C.T.)*
1981	65.2	14.7	157.5	62.4	115.8	2.2	77.6	495.4
1982	63.4	14.4	157.1	62.9	113.5	2.2	77.1	490.8
1983	64.0	14.2	155.9	60.2	112.0	2.2	75.2	483.8
1984	64.0	14.3	158.1	62.1	114.3	2.2	73.7	488.6
1985	63.7	14.2	157.2	62.7	114.0	2.1	74.0	488.0
1986	63.3	14.2	158.1	60.7	113.8	2.1	72.9	485.2

LAND UTILISATION: AUSTRALIA
(million hectares)

	Area of			*Total*	
Year	*crops (a) (b)*	*sown pastures and grasses (b)*	*Balance (c)*	*Area of establishments*	*Percentage of Australian land area (768,284,000 hectares)*
1980–81	18.3	24.9	452.3	495.4	64.5
1981–82	19.6	26.9	444.2	490.8	63.9
1982–83	19.4	25.6	438.8	483.8	63.0
1983–84	22.0	26.1	440.5	488.6	63.6
1984–85	21.1	27.1	439.8	488.0	63.5
1985–86	20.9	27.5	436.8	485.2	63.2

(*a*) Excludes pastures and grasses harvested for hay and seed which have been included in 'sown pastures and grasses'. (*b*) Prior to 1981–82 figures related to area 'used for' crop or pasture, i.e., an area used for more than one purpose during the year was counted only once. From 1981–82, an area double cropped or an area of pasture also planted to crop has been counted separately each time used. (*c*) Used for grazing, lying idle, fallow, etc.

The total area of agricultural establishments in 1985–86 constituted 63.2 per cent of the Australian land area, the remainder being urban areas, State forests and mining leases, with an overwhelming proportion of unoccupied land (mainly desert). The balance data include large areas of arid or rugged land held under grazing licences but not always used for grazing. Balance data also include variable amounts of fallow land.

The crop area data represent up to 4.3 per cent of the area of agricultural establishments and emphasise the relative importance of the livestock industry in Australia. (*see* page 501)

Crops

For this section, statistics relating to crop areas and production have been obtained from the annual Agricultural Census. The Census returns are collected in all States and the two Territories at 31 March each year and relate mainly to crops sown in the previous twelve months.

Where harvests are not completed by March (e.g. potatoes), provision is made in some States for a supplementary collection after the harvest is completed. Additional statistics relating to value of agricultural commodities produced, manufactured production and overseas trade are also included. Agricultural Census data published in this section refer to the 'agricultural' year ended 31 March, while other data refer to the year ended 30 June; but for most purposes there will be little error involved in considering 'agricultural year' data as applying to the financial year.

The following table shows the area of crops in each of the States and Territories of Australia since 1860–61.

AREA OF CROPS (*a*)

('000 hectares)

Year	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas*	*N.T.*	*A.C.T.*	*Aust.*
1860–61	100	157	2	145	10	62	—	—	475
1870–71	156	280	21	325	22	64	—	—	868
1880–81	245	627	46	846	26	57	—	—	1,846
1890–91	345	822	91	847	28	64	—	—	2,197
1900–01	990	1,260	185	959	81	91	—	—	3,567
1910–11	1,370	1,599	270	1,112	346	116	—	—	4,813
1920–21	1,807	1,817	316	1,308	730	120	—	1	6,099
1930–31	2,756	2,718	463	2,196	1,939	108	1	2	10,184
1940–41	2,580	1,808	702	1,722	1,630	103	—	2	8,546
1949–50	2,295	1,881	832	1,518	1,780	114	—	4	8,424
1954–55	2,183	1,904	1,049	1,711	2,069	122	—	2	9,040
1959–60	2,888	1,949	1,184	1,780	2,628	130	1	3	10,564
1964–65	4,182	2,621	1,605	2,414	3,037	163	2	4	14,028
1969–70	4,999	2,212	2,208	2,290	3,912	98	6	2	15,728
1971–72	4,186	1,925	2,017	2,278	3,751	67	7	1	14,231
1972–73	4,329	1,943	1,963	2,122	3,814	80	12	1	14,265
1973–74	4,628	1,981	1,786	2,451	4,133	74	6	1	15,060
1974–75	4,089	1,772	1,898	2,257	3,754	67	7	1	13,845
1975–76	4,285	1,851	2,010	2,116	4,208	60	8	1	14,539
1976–77	4,520	1,943	2,026	2,036	4,417	65	2	1	15,010
1977–78	4,984	2,163	2,107	2,564	4,910	70	1	1	16,800
1978–79	5,020	2,209	2,307	2,827	4,993	80	2	1	17,438
1979–80	5,243	2,243	2,334	2,771	5,281	79	2	1	17,954
1980–81	5,208	2,180	2,481	2,772	5,547	84	1	1	18,273
1981–82	5,744	2,184	2,765	2,865	5,963	90	2	1	19,613
1982–83	5,200	2,234	2,648	2,856	6,380	98	3	1	19,420
1983–84	6,566	2,655	2,998	3,108	6,526	101	5	1	21,961
1984–85	5,789	2,569	3,047	2,902	6,723	99	6	1	21,136
1985–86	5,990	2,528	3,231	3,039	5,970	88	7	1	20,853

(*a*) The classification of crops was revised in 1971–72 and adjustments made to statistics back to 1967–68. After 1966–67 lucerne for green feed, hay and seed, and pasture cut for hay and harvested for seed or green feed are excluded.

NOTE: From 1970–71 to 1980–81 figures related to area 'used for' crops, ie, an area used for more than one purpose during the year was counted only once. From 1981–82, an area double cropped has been counted separately each time used.

The wide range of climatic and soil conditions over the agricultural regions of Australia has resulted in a diversity of crops being grown throughout the country. Generally, cereal crops (excluding rice, maize and sorghum) are grown in all mainland States over wide areas, while other crops are confined to specific locations in a few States. However, scanty or erratic rainfall, limited potential for irrigation and unsuitable soils or topography have restricted intensive agriculture. Despite this, agricultural production has increased over time to meet increased demands both in Australia and from overseas.

The following table provides an Australian summary of the area, production and gross value of the principal crops.

CROPS: AREA, PRODUCTION AND GROSS VALUE

	1983–84			*1984–85*			*1985–86*		
	Area ('000 ha)	*Production ('000 tonnes)*	*Gross value ($m)*	*Area ('000 ha)*	*Production ('000 tonnes)*	*Gross value ($m)*	*Area ('000 ha)*	*Production ('000 tonnes)*	*Gross value ($m)*
Cereals for grain—									
Barley	3,109	4,890	733	3,518	5,554	759	3,284	4,868	587
Grain sorghum	730	1,885	246	723	1,369	197	734	1,416	181
Maize	68	238	36	103	291	46	84	278	40
Oats	1,772	2,296	204	1,041	1,367	130	1,068	1,330	138
Rice	119	632	89	122	866	123	107	716	81
Wheat	12,931	22,016	3,606	12,078	18,666	3,203	11,736	16,167	2,719
Legumes for grain	510	541	96	787	784	114	894	854	163
Crops for hay—									
Oats	279	994	80	182	633	45	182	594	47
Wheat	71	209	15	53	163	12	59	165	13
Crops for green feed, silage—									
Barley	58	n.a.	n.a.	54	n.a.	n.a.	75	n.a.	n.a.
Forage sorghum	72			81			116		
Oats	611			571			662		
Wheat	23			19			29		
Sugar cane cut for crushing	307	24,194	517	313	25,450	512	304	24,402	494
Tobacco	7	14	71	5	12	65	5	11	56
Cotton	137	400	269	183	679	330	177	685	325
Peanuts	32	47	40	30	42	37	29	43	38
Linseed	5	4	1	6	6	2	10	12	4
Rapeseed	18	17	5	30	32	10	74	87	24
Safflower	55	31	8	44	32	8	47	28	6
Sunflower	234	170	59	354	293	88	277	215	53
Fruit (excl. grapes)	108	—	552	109	—	259	113	—	679
Fruit—									
Orchard	90	—	418	91	—	522	94	—	518
Oranges	n.a.	392	105	n.a.	445	132	n.a.	496	132
Apples	20	267	134	21	352	178	20	292	139
Pears	n.a.	122	46	n.a.	139	51	n.a.	143	64
Peaches	n.a.	48	25	n.a.	60	28	n.a.	61	29
Bananas	9	146	87	9	145	93	10	134	102
Pineapples	6	115	26	6	125	33	6	132	33
Grapes	65	841	217	64	890	259	64	907	270
Vegetables	110	—	739	111	—	629	111	—	714
Potatoes	38	1,020	290	38	992	163	36	965	206
Total, all crops (excluding pastures)	**21,961**	—	**7,892**	**21,136**	—	**7,626**	**20,853**	—	**7,049**

In the tables that follow, crop statistics are shown in these groupings: wheat, coarse grains, rice, oilseeds, sugar, vegetables, fruit, grapes and other crops such as tobacco, mushrooms and fodder crops.

Cereal grains

In Australia, cereals are conveniently divided into autumn-winter-spring growing ('winter' cereals) and spring-summer-autumn growing ('summer' cereals). Winter cereals such as wheat, oats, barley and rye are usually grown in rotation with some form of pasture such as grass, subterranean clover, medics or lucerne. In recent years, alternative winter crops such as rapeseed, field peas and lupins have been introduced to cereal rotation in areas where they had not previously been grown. Rice, maize, sorghum and the millets are summer cereals with the latter two being grown in association with winter cereals in some areas. In Northern Queensland and Western Australia there are two rice growing seasons—a dry season winter crop and a wet season summer crop.

Cereals for grain form a significant percentage of both the value of Australia's agricultural commodities and of the country's export earnings. The following table shows the significance of cereal grains in the last 6 years.

CEREAL GRAINS IN AUSTRALIA: A PERSPECTIVE

Year	*Cereal grains(a)*		*Total agriculture gross value*	*Total Australian exports—all produce value f.o.b.*	*Gross value of cereal grains as a percentage of gross value of agriculture*	*Export value of cereal grains as a percentage of total Australian exports*
	Gross value	*Export value f.o.b.*				
	$m	$m	$m	$m	per cent	per cent
1980–81	2,532.0	2,160.6	11,584	18,949	21.9	11.3
1981–82	3,512.7	2,367.9	12,708	19,294	27.6	12.1
1982–83	2,230.4	1,669.7	11,714	21,454	19.0	7.6
1983–84	4,950.6	2,564.9	15,425	24,013	32.1	10.9
1984–85	4,492.6	4,068.8	15,436	29,708	29.1	13.9
1985–86	3,790.8	3,812.6	15,398	32,795	24.6	11.9

(*a*) Principally wheat, barley, oats, grain sorghum, rice and maize, with panicum/millet, canary seed and rye being minor cereals.

Wheat

Wheat is grown in all States, and is Australia's most important crop in terms of production and exports. As 70 to 80 per cent of the wheat crop is exported, wheat marketing arrangements play an important role in the industry. The Australian Wheat Board (AWB) was constituted in September 1939, under *National Security (Wheat Acquisition) Regulations*, to purchase, sell or dispose of wheat and wheat products. At the end of World War II, the AWB continued to operate under extensions to these regulations, until 1948, when the Commonwealth and States agreed to national marketing arrangements. After a poll of growers had approved the plan the necessary complementary legislation was passed by the Commonwealth and the States. The *Wheat Industry Stabilization Act 1948* established the present AWB to acquire and market all wheat and to administer successive stabilisation plans. The *Wheat Marketing Act 1979* replaced the stabilisation plans with a guaranteed minimum price scheme, applicable to an unlimited quantity of wheat.

Wheat marketing and pricing arrangements 1984–85 to 1988–89

The basic elements of the new arrangements were negotiated between the Australian Wheatgrowers' Federation (now renamed the Grains Council of Australia) and Commonwealth and State Governments. The enactment of State legislation complementary to the Commonwealth legislation was necessary for the implementation of a national scheme.

Under current arrangements, the AWB continues as a statutory authority responsible for the marketing of wheat in Australia and overseas although it can now issue permits for the domestic sale of stockfeed wheat outside the pooling arrangements. The concept of a guaranteed minimum price is retained. The Board has been given greater commercial freedom but is required to operate in accordance with an approved corporate plan and be accountable to growers as well as parliament. The following are important features in the current plan.

Guaranteed Minimum Price

The Commonwealth Government underwrites wheat returns on a net basis through a Guaranteed Minimum Price (GMP) Scheme. The Australian Standard White (ASW) GMP is set at 95 per cent of the average of the estimated gross return per tonne for all wheat (ASW basis) from the subject season and the lowest two of the previous three seasons less the estimated pool costs per tonne for the subject season. Separate GMPs are established for categories of wheat, the quality of which is above or below ASW, based on the expected market value of the wheat in those categories relative to ASW.

Growers receive a split first advance payment. Upon delivery of the wheat, a grower is paid 90 per cent of the estimated GMP for the relevant category less contributions to research (wheat tax), dockages for non-approved varieties and allowances for storage, handling and transportation charges. When the final GMP has been determined (before 1 March during the subject season), the grower receives the final GMP, increased or decreased by an allowance for the quality of wheat (in addition to the deductions made at the time of delivery), less the interim advance payment already received. Initial allowances may be adjusted by the Board at a later date to reflect actual costs and returns. If the net return per tonne exceeds the GMP, the excess is returned to growers by way of a final payment, which may be made by instalments over a number of years. The government meets any deficiency between the net pool return rate and the GMP.

These arrangements are market related but they provide the industry with support from the government that is designed to help it overcome any major short-run down-turn in producers' returns. Particulars of GMP rates may be found in *Crops and Pastures, Australia* (7321.0).

Financial arrangements

From 1984–85, the AWB with the Minister's approval has been able to borrow overseas up to an amount equal to the aggregate size of expected foreign currency denominated sales in respect of a particular season, provided that amount does not exceed that season's net financing requirement.

Domestic pricing

The domestic price for human consumption wheat is determined each quarter by averaging the quoted export prices for the forward and past quarters and adding a margin to cover the additional costs of servicing the domestic market. The prices for the four quarters from October 1986 ranged from $184.56 per tonne to $192.79 per tonne, including $1.30 per tonne Tasmanian freight levy. This levy applies to all domestic wheat sales and is used exclusively to cover the cost of shipping wheat from the mainland to Tasmania each season.

Domestic prices for industrial and stockfeed wheats are quoted daily by the AWB in the light of its commercial judgment and are related to export prices.

Domestic marketing arrangements

The AWB controls the domestic marketing of wheat although domestic stockfeed wheat may be directly sold by growers to buyers under a permit issued by the AWB. The availability of these permits is governed by guidelines issued by the Federal Minister for Primary Industries and Energy and the relevant State Ministers. Wheat sold pursuant to a stockfeed purchase permit is subject to a deduction to cover wheat research tax, Tasmanian freight, the AWB's administration costs and a reduced bulk handling authority charge. No pooling or GMP provisions or minimum or maximum prices apply in respect of such wheat.

The AWB may also authorise a grower to sell wheat on behalf of the AWB under grower-to-buyer direct delivery transactions. The grower and buyer negotiate quality and freight allowances around the AWB's domestic ASW price applicable for the same end use. The proceeds of sale are incorporated in the AWB's pooling arrangements.

The grower receives payment from the AWB as if he had delivered ASW wheat, adjusted by the abovementioned allowances and a reduction in the relevant bulk handling authority's charge.

Wheat which is retained by a grower for his own use does not come under the control of the AWB.

The AWB has power to import wheat for use on the domestic market.

Overseas marketing arrangements

Under the 1984 Act, the AWB maintains sole authority for the export of wheat but no longer controls the export of wheat products. The Act extends the powers of the Board in relation to overseas marketing to enable it to enter into tripartite barter arrangements and the sale and shipment of other grains in combination with wheat. The AWB undertakes market research and promotion both within and outside Australia.

Wheat classification

Unlike the other wheat exporting nations, Australia does not produce red grained wheats, nor does it have the traditional winter or spring wheats found in the northern hemisphere.

All Australian wheats are white grained, and all are planted during the Australian winter months of May, June and July. They grow during the spring months of August, September and October. The harvest commences in Queensland in September/October and gradually progresses southwards, culminating in Victoria and the southern part of Western Australia in January.

The various combinations of wheat varieties, soil fertility and seasonal conditions encountered throughout the Australian wheat belt enable a wide spectrum of recognised wheat types to be produced. These range from high protein hard grained wheats to low protein soft grained wheats.

Before wheat delivered by farmers can be received into the bulk handling system, the wheat must conform to strict receival standards. These standards are set by the AWB and are collectively referred to as Australian Standard White specification, which broadly relates to moisture content (12 per cent maximum), test weight (74 kilograms per hectolitre minimum), no insects, and a range of tolerances for unmillable material, weather damaged and sprouted kernels, foreign matter and foreign seeds.

In addition to the receival standards, a system of varietal control operates Australia-wide in which the AWB can impose a monetary penalty on wheat received according to the variety delivered and the region of production. The aim of this system is to ensure that varieties are grown in areas where the protein content that they are likely to achieve is in line with the processing characteristics of the wheat (grain hardness, milling quality, dough properties), and to highlight to growers the need to grow marketable varieties of wheat.

The system of classification of Australian wheats has evolved in response to changing market demands. The wheats are classified into two broad categories, namely the milling and non-milling classes, according to test weight, grain soundness and other physical factors. Further classification into grades is based on wheat variety, protein content and grain hardness.

Australian wheats of the following categories are suitable for milling purposes:

- Australian Prime Hard
- Australian Hard
- Australian Standard White (ASW)
- Australian Soft
- Australian Durum
- Australian General Purpose 1

Australian General Purpose 2 and Feed categories are non-milling wheats which have incurred weather damage or have some other defect.

There can exist within each category a number of individual classes, many of which have been developed to meet individual customer requirements. Particulars of Australian wheat standards may be found in *Crops and Pastures, Australia* (7321.0).

Central Grain Research Laboratory

In 1976, the Australian Wheat Board established this laboratory in Sydney as an addition to the facilities of the Bread Research Institute of Australia. The main functions of the laboratory are to test and report on the Australian crop, to analyse and compare competitor wheats from other countries and to develop research programs to aid the marketing of wheat.

WHEAT: AREA, PRODUCTION AND RECEIVALS

Season	*Area (a)*		*Production (a)*		*Australian Wheat Board receivals (b)*
	For grain	*All purposes*	*Grain*	*Gross value*	
	'000 ha	'000 ha	'000 tonnes	$m	'000 tonnes
1980–81	11,283	11,436	10,856	1,684.1	10,021
1981–82	11,885	11,995	16,360	2,599.4	(*b*)15,531
1982–83	11,520	11,755	8,876	1,566.2	7,927
1983–84	12,931	13,025	22,016	3,605.6	21,059
1984–85	12,078	12,150	18,666	3,202.9	17,544
1985–86	11,736	11,823	16,167	2,719.4	15,085

(*a*) Area and production data relate to the year ending 31 March. (*b*) Due to amendments to the *Wheat Marketing Act 1979*, the AWB has changed from a December-November to an October-September crop year. To facilitate this transition, 1981–82 was a 10 month (December-September) reporting period.

WHEAT FOR GRAIN: AREA AND PRODUCTION, BY STATE

Season	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*Australia*
AREA ('000 hectares)							
1980–81	3,345	1,431	727	1,445	4,333	2	11,283
1981–82	3,600	1,322	941	1,427	4,593	1	11,885
1982–83	3,162	1,327	767	1,398	4,865	1	11,520
1983–84	3,999	1,614	1,006	1,564	4,746	2	12,931
1984–85	3,603	1,523	921	1,378	4,652	2	12,078
1985–86	3,663	1,508	973	1,443	4,148	2	11,736
PRODUCTION ('000 tonnes)							
1980–81	2,865	2,538	485	1,650	3,315	3	10,856
1981–82	5,910	2,467	1,482	1,695	4,803	2	16,360
1982–83	1,499	394	754	692	5,534	1	8,876
1983–84	8,961	3,971	1,922	2,843	4,316	3	22,016
1984–85	5,805	2,666	1,579	2,031	6,580	4	18,666
1985–86	5,916	2,250	1,691	1,944	4,362	4	16,167

PRODUCTION AND DISPOSAL OF WHEAT

('000 tonnes)

	1981	*1982*	*1983*	*1984*	*1985*	*1986*
Year ended 31 March—						
Production	10,856	16,360	8,876	22,016	18,666	16,167
Balance held on farm for seed, feed and other uses	835	829	949	957	1,122	1,082
Year ended 30 September(*a*)—						
Wheat received	10,021	15,531	7,927	21,059	17,544	15,085
Carryin	4,268	2,044	4,879	2,285	7,518	8,456
Total availability for export, domestic disposal and carryover	*14,289*	*17,575*	*12,806*	*23,344*	*25,062*	*23,541*
Exports of wheat, flour and wheat products	9,614	11,068	7,280	14,159	14,679	16,026
Domestic disposals	2,631	1,628	3,241	1,667	1,941	1,709
Total disposals	*12,245*	*12,696*	*10,521*	*15,826*	*16,620*	*17,735*

(*a*) Due to amendments to the *Wheat Marketing Act 1979*, the AWB has changed from a December-November to an October-September crop year. To facilitate this transition, 1981–82 was a 10 month (December-September) reporting period.

Wheat pools

Details of wheat receivals by State of origin for the several Pools together with Pool payments and times of payment will be found in the latest issue of *Crops and Pastures, Australia* (7321.0).

International Wheat Agreement

A number of Agreements have operated since 1933 to provide a valuable framework for continuing international consultation and co-operation on world wheat matters, including the regular monitoring of the world wheat situation. On 1 July 1986, the International Wheat

Agreement 1986 entered into force and will remain in force until 30 June 1991. It comprises two separate legal instruments, the Wheat Trade Convention and the Food Aid Convention, linked by a common preamble. The primary objective of the Wheat Trade Convention is to promote international co-operation in all aspects of trade in wheat and other grains. Under the Food Aid Convention, countries undertake to provide minimum annual amounts of food grain as aid. Contributions are made by both wheat importing and exporting countries in the form of grain (or grain products) for human consumption or cash for the purchase of grain.

WHEAT EXPORTS: A COMPARISON WITH OTHER EXPORT COMMODITIES(*a*)

	Wheat for grain: Export			
Year	*Quantity*	*Value f.o.b.*	*Total Australian exports—all produce: Value f.o.b.*	*Export value of wheat for grain as a percentage of total Australian exports*
	'000 tonnes	$m	$m	per cent
1980–81	10,552	1,729.4	18,949	9.0
1981–82	10,912	1,719.7	19,249	8.8
1982–83	8,022	1,343.1	21,454	6.1
1983–84	10,535	1,813.8	24,013	7.3
1984–85	15,704	2,866.9	29,708	9.8
1985–86	16,109	2,968.8	32,795	9.3

(*a*) These statistics exclude re-exports.

WORLD WHEAT: AREA AND PRODUCTION

(*Source:* International Wheat Council, *World Wheat Statistics, 1986*)

	Area (million hectares)			*Production (million tonnes)*		
	1983–84	*1984–85*	*1985–86*	*1983–84*	*1984–85*	*1985–86*
Europe	27.1	27.2	26.3	103.6	129.2	112.5
EEC (10)	13.2	13.6	13.0	59.4	76.1	65.6
U.S.S.R.	50.8	51.1	50.3	77.5	68.6	78.1
North & Central America	39.4	41.3	40.9	95.9	96.4	95.5
Canada	13.7	13.2	13.7	26.5	21.2	24.3
U.S.A.	24.8	27.1	26.2	65.9	70.6	66.0
South America	10.0	8.9	9.0	16.9	17.4	15.1
Asia	82.5	83.3	83.5	169.6	177.1	177.6
China (*a*)	29.1	29.6	29.2	81.4	87.8	85.8
India	23.6	24.7	24.4	42.8	45.5	44.2
Iran	6.0	6.0	6.0	6.5	6.0	6.5
Pakistan	7.4	7.4	7.3	12.4	10.9	11.7
Turkey	9.3	9.0	9.1	16.4	17.2	17.0
Africa	8.1	8.3	8.6	8.5	9.4	10.5
Oceania	13.0	12.2	11.8	22.3	19.0	16.3
Australia	12.9	12.1	11.7	22.0	18.7	16.2
Total	**230.9**	**232.3**	**230.5**	**495.9**	**516.8**	**505.3**

(*a*) Excludes Taiwan Province; FAO estimates.

NOTE 1. Crop years shown cover northern hemisphere harvests combined with those of the southern hemisphere which immediately follow.

2. The 10 members of the EEC are: Belgium, Denmark, France, Federal Republic of Germany, Greece, Ireland, Italy, Luxembourg, Netherlands and the United Kingdom.

Australia acceded to the Wheat Trade Convention, 1986 in July 1986. Major changes from the previous Wheat Trade Convention, which operated from 1971, include expansion to cover coarse grains and amendments to reflect the fact that the Convention does not contain economic provisions. The Wheat Trade Convention through its plenary body, the

International Wheat Council (IWC), provides a forum for exchange of information and discussion of members' concerns regarding trade in grains. In the context of the current round of GATT Multilateral Trade Negotiations, Australia has proposed that the IWC Secretariat undertake a study examining the effects of changes in national policies on world grains markets.

Australia made a formal application to accede to the Food Aid Convention, 1986 at the 53rd Session of the Food Aid Committee in December 1986 with a minimum annual contribution of 300,000 tonnes, compared with 400,000 tonnes under the previous Convention. The decision to reduce the level of Australia's commitment was made against the background of the severe economic difficulties being experienced in Australia which, inter alia, have effectively reduced our capacity to provide development assistance, including food aid. Australia's application was accepted at the 54th Session of the Food Aid Convention in June 1987.

Coarse grains

In the late sixties and early seventies, restrictions on wheat deliveries and low returns in the sheep industry caused a resurgence of interest in coarse grain crops and the newer oilseed crops. The resultant higher level of plantings and production has been maintained, despite the lifting of wheat delivery quotas and a general improvement in market prospects for wheat, wool and meat.

Oats

Oats are traditionally a cereal of moist temperate regions. However, improved varieties and management practices have enabled oats to be grown over a wide range of soil and climatic conditions. They have a high feed value and produce a greater bulk of growth than other winter cereals; they need less cultivation and respond well to superphosphate and nitrogen. Oats have two main uses: as a grain crop, or as a fodder crop, (following sowing or fallow or rough sowing into stubble or clover pastures). Fodder crops can either be grazed and then harvested for grain after removal of livestock or else mown and baled or cut for chaff. Oats produced in New South Wales are marketed through a statutory board while the Victorian Oatgrowers' Pool and Marketing Company Ltd and private merchants market the bulk of oats produced in Victoria. In South Australia the Barley Marketing Act was amended in 1977 to give the Australian Barley Board powers over oat marketing in that State. Under the legislation amendments, the Board controls export sales and grain resold on the local market; however, direct sales between producers and consumers are outside the Board's supervision. In Western Australia, oats are marketed under a warehousing system operated by Co-operative Bulk Handling Ltd.

Oats are usually next in importance to wheat and barley among the grain crops. About three-quarters of the crop is used domestically as stockfeed or for human consumption.

OATS FOR GRAIN: AREA, PRODUCTION AND EXPORTS

Year	*Area*	*Production*		*Exports*	
		Quantity	*Gross value*	*Quantity*	*Value f.o.b.*
	'000 ha	'000 tonnes	$m	'000 tonnes	$m
1980–81	1,093	1,128	139.5	196	27.7
1981–82	1,388	1,617	155.7	153	24.1
1982–83	1,212	848	116.1	83	13.2
1983–84	1,772	2,296	203.8	289	40.9
1984–85	1,041	1,367	129.6	391	49.0
1985–86	1,068	1,330	138.3	185	25.1

Barley

This cereal contains two main groups of varieties, 2-row and 6-row. The former is generally, but not exclusively, preferred for malting purposes. Barley is grown principally as a grain crop although in some areas it is used as a fodder crop for grazing, with grain being subsequently harvested if conditions are suitable. It is often grown as a rotation crop with wheat, oats and pasture. When sown for fodder, sowing may take place either early or late in the season, as it has a short growing period. It may therefore provide grazing or fodder supplies when other sources are not available. Barley grain may be crushed to meal for stock or sold for malting.

Crops sown for malting purposes require a combination of light textured soil of moderate fertility, reliable rainfall, and mild weather during ripening. The main barley-growing areas in Australia are situated in South Australia, but considerable quantities are also grown in New South Wales, Western Australia, Victoria and Queensland. In December 1980, a joint Commonwealth/industry research scheme for the barley industry commenced operation. The scheme is financed by a levy on barley production and a Commonwealth contribution not exceeding the total of the levy.

Barley is marketed by statutory marketing authorities in each of the mainland States. The Australian Barley Board controls marketing in both South Australia and Victoria, while separate authorities operate in the three other States.

BARLEY FOR GRAIN: AREA, PRODUCTION AND EXPORTS

		Production				*Exports*	
				Total			
Year	*Area*	*2-row*	*6-row*	*Quantity*	*Gross value*	*Quantity*	*Value f.o.b.*
	'000 ha	—'000 tonnes—			$m	'000 tonnes	$m
1980–81	2,451	2,563	119	2,682	380.9	1,598	242.7
1981–82	2,685	3,252	198	3,450	463.5	1,577	241.3
1982–83	2,452	1,785	153	1,939	287.6	834	131.4
1983–84	3,109	4,585	305	4,890	732.6	3,121	499.4
1984–85	3,518	5,194	361	5,554	759.3	5,183	750.0
1985–86	3,284	4,635	233	4,868	586.8	4,168	536.6

Grain sorghum

The sorghums are summer growing crops which are used in three ways: grain sorghum for grain; sweet or fodder sorghum, sudan grass and, more recently, columbus grass for silage, green feed and grazing; and broom millet for brooms and brushware.

Grain sorghum has been grown extensively only in the last two decades. Rapid increases in production have resulted in a substantial increase in exports over this period. The grain is used primarily as stockfeed and is an important source for supplementing other coarse grains for this purpose.

The climatic conditions of Queensland and northern New South Wales are particularly suited to the growing of sorghum. In Queensland, grain sorghum production is concentrated in the Darling Downs, Fitzroy and Wide Bay-Burnett Divisions. In New South Wales, the northern and north-western slopes and plains are the main areas.

In Queensland, a degree of orderly marketing is ensured by the operation of the Central Queensland Grain Sorghum Marketing Board (a statutory authority in a defined area in central Queensland). A State statutory marketing board handles sorghum grown in New South Wales.

GRAIN SORGHUM: AREA, PRODUCTION AND EXPORTS

		Production		*Exports*	
Year	*Area*	*Quantity*	*Gross value*	*Quantity*	*Value f.o.b.*
	'000 ha	'000 tonnes	$m	'000 tonnes	$m
1980–81	657.9	1,203.9	152.0	462.7	57.5
1981–82	648.6	1,316.7	140.1	1,270.9	152.8
1982–83	706.5	958.0	124.4	445.0	53.9
1983–84	730.3	1,885.5	246.3	772.1	110.7
1984–85	723.0	1,369.0	196.9	1,593.6	242.1
1985–86	734.2	1,415.7	180.8	1,234.2	177.6

Maize

Like sorghum, maize is a summer cereal demanding specific soil and climatic conditions. Maize for grain is almost entirely confined to the south-east regions and Atherton Tablelands of Queensland; and the north coast, northern slopes and tablelands and the Murrumbidgee Irrigation Area in New South Wales. Small amounts are grown in all States, except South Australia, for green feed and silage, particularly in association with the dairy industry.

A statutory board controls the marketing of maize in the Atherton Tablelands area of Queensland. A large proportion of the crop is sold directly to food processors.

MAIZE: AREA, PRODUCTION AND EXPORTS

Year	Area	Production Quantity	Production Gross value	Exports Quantity	Exports Value f.o.b.
	'000 ha	'000 tonnes	$m	'000 tonnes	$m
1980–81	56.5	172.8	26.1	29.1	3.4
1981–82	61.0	212.4	29.6	14.2	1.9
1982–83	64.3	139.1	23.3	18.3	2.4
1983–84	68.4	238.2	35.6	19.0	2.8
1984–85	102.9	291.4	46.1	139.8	24.9
1985–86	84.2	277.7	40.4	81.3	13.2

Rice

In Australia, rice was first grown commercially in 1924–25 in the Murrumbidgee Irrigation Area, one of three irrigation areas in southern New South Wales where rice is now produced. Today, about 97 per cent of Australia's rice is grown in New South Wales. The remainder is grown in the Burdekin River basin and at Mareeba in Northern Queensland.

Rice is a summer growing crop in New South Wales. The combination of irrigation water and the relatively cloudless days characteristic of summers in temperate regions of the world is the main contributing factor to the very high yields per hectare often achieved by New South Wales growers. In Queensland, a winter and a summer crop are grown.

State statutory marketing boards are responsible for the marketing of the New South Wales and Queensland crops.

RICE: AREA, PRODUCTION AND EXPORTS

Year	Area	Production Quantity(a)	Production Gross value	Exports Quantity	Exports Value f.o.b.
	'000 ha	'000 tonnes	$m	'000 tonnes	$m
1980–81	103.9	727.5	138.2	281.3	99.9
1981–82	122.9	853.9	103.5	596.3	195.4
1982–83	84.8	547.7	88.4	404.7	120.3
1983–84	119.0	632.2	88.9	245.6	91.9
1984–85	122.0	865.7	123.1	341.4	121.7
1985–86	106.6	716.1	80.5	177.9	77.0

(a) In terms of paddy (or rough) rice.

Oilseeds

Specialised oilseeds

The oilseeds industry is a relatively young industry by Australian agricultural standards. Production has increased rapidly in recent years following changes in relative profitability and agronomic advances. The expected profitability of oilseeds relative to crops such as wheat and coarse grains will continue to influence future production levels in the industry. This profitability will be related to domestic and international markets for protein meals and vegetable fats and oils.

The specialist oilseed crops grown in Australia are sunflower, soybeans, rapeseed, safflower and linseed. Sunflower and soybeans are summer grown while the others are winter crops. In Australia, oilseeds are crushed for their oil, which is used for both edible and industrial purposes and protein meals for livestock feeds.

Oilseed crops are grown in all States but the largest producing regions are the grain growing areas of the eastern States.

Sunflower

When crushed, sunflower seed yields a high quality dual purpose oil used primarily to manufacture margarine, salad and cooking oils.

Queensland produces about two-thirds of the Australian crop with the Darling Downs and Central Highlands being the major regions. New South Wales is the next largest producer with the north-west of the State dominating production. Smaller amounts are produced in all other States except Tasmania.

Soybeans

The major uses of soybean oil are in salad and cooking oils and margarine. Small amounts are used in the production of paints, detergents and plastics. Soybeans also yield a high protein feed for livestock with a small proportion used to manufacture adhesives and synthetic fibres and meats.

Queensland and New South Wales produce virtually all of Australia's soybean crop. The main producing areas are the irrigation districts of the Darling Downs and northern New South Wales. Lesser areas include the Burnett and Lockyer regions of Queensland, while production of raingrown soybeans is expanding on the North Coast of New South Wales.

In irrigated areas, soybeans have increasingly been used as a rotational crop for cotton.

Rapeseed

The main use of rapeseed oil has been in salad and cooking oils and in margarine with a small amount being used for industrial purposes.

The major production areas are the tablelands and western slopes of New South Wales followed by the south-east of South Australia and the Western Districts of Victoria. Smaller levels of production occur in the South Coast region of Western Australia.

Following significant increases in the 1960s and 1970s, rapeseed production declined rapidly due to problems of blackleg disease and erucic acid content. Production has recovered in recent years with the development of varieties to overcome these problems and in response to the crop rotation benefits of rapeseed.

Safflower

The oil from safflower is used in the production of cooking oil, margarine, soaps, paints, varnishes, enamels and textiles. In recent years, New South Wales and Queensland together have produced around 90 per cent of Australian output. In Queensland, most production occurs in the Central Highlands with smaller amounts coming from the Dawson-Callide Valley and the Darling Downs. New South Wales production is centred on the Central West.

Wide fluctuations in safflower production since the mid-1960s have been due to variable seasonal conditions affecting yields and the profitability of other crops which has influenced plantings.

Linseed

The oil from crushed linseed is used in the manufacture of paints, varnishes, technical inks and linoleum.

The main producing areas are the wheat belt of New South Wales, the Darling Downs in Queensland, the Western Districts of Victoria and, to a lesser extent, the south-eastern districts of Victoria. Linseed production has been generally declining in recent years.

Other oilseeds

Peanuts and cottonseed are summer crops grown primarily for human consumption and fibre purposes respectively. The rapid expansion of the cotton industry in recent years has resulted in cottonseed becoming the major oilseed in Australia. Cottonseed oil is used mainly in the manufacture of compound cooking fats and margarine. The least important source of vegetable oils in Australia is peanuts as it is only the low quality kernels which are crushed

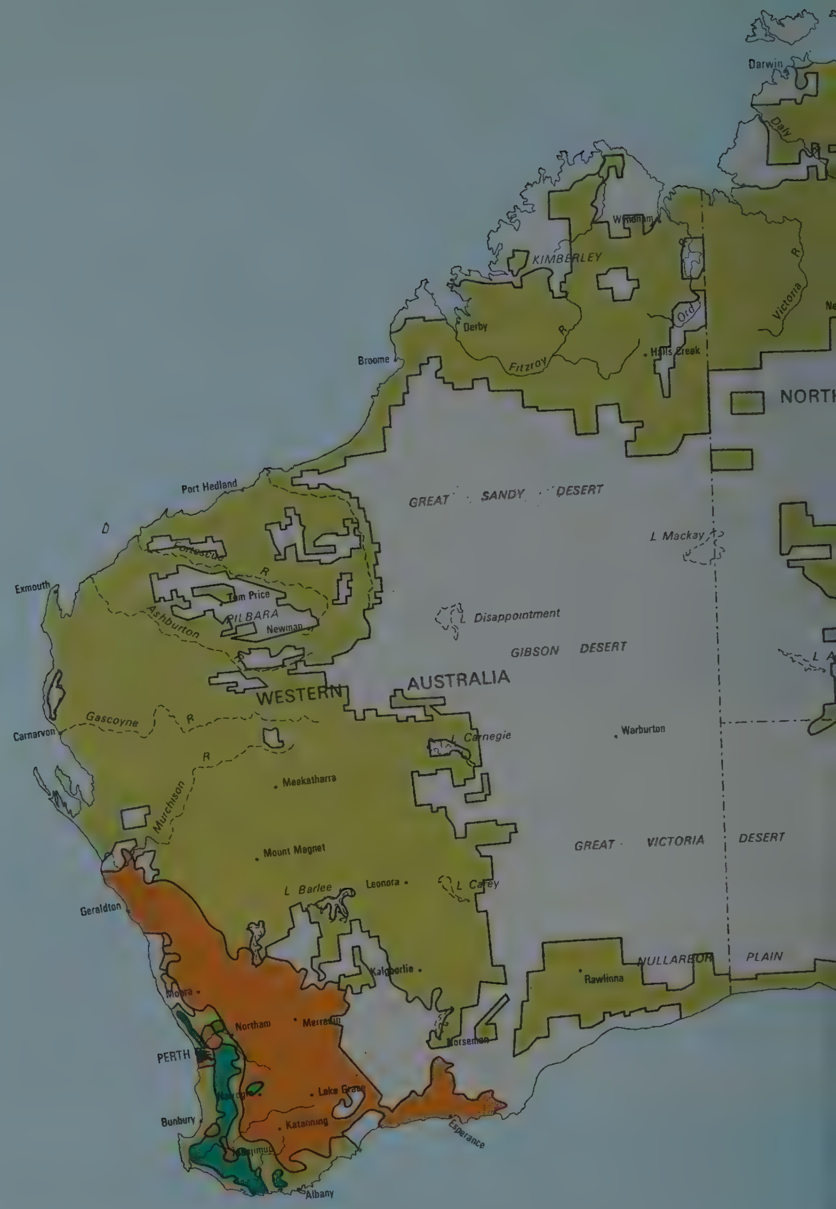
Sugar cane fields, North Queensland.

Shearing shed near Hall, A.C.T.

Photographs—Promotion Australia.

Dairy farm, Bega, N.S.W.

Cropdusting near Narromine, N.S.W.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L Mackay
Fortescue
R
Exmouth
Tom Price
PILBARA
Ashburton
Newman
L Disappointment
GIBSON DESERT
AUSTRALIA
WESTERN
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Carnarvon
Carnegie
Warburton
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Murchison
Mount Magnet
GREAT VICTORIA DESERT
L Barlee
Leonora
L Carey
Geraldton
NULLARBOR PLAIN
Rawlinna
Kalgoorlie
Moora
Northam
Merredin
Norseman
PERTH
Lake Grace
Bunbury
Katanning
Esperance
Manjimup
Albany

PREDOMINANT LAND USE

🟩 Livestock grazing

🟪 Major irrigation

🟧 Cropping and livestock grazing

🟩 Forestry

☐ Non-agricultural land

SOURCE: *Atlas of Australian Resources*, Third Series, Volume 4 ('Climate'), Division of National Mapping, 1986.

NATMAP

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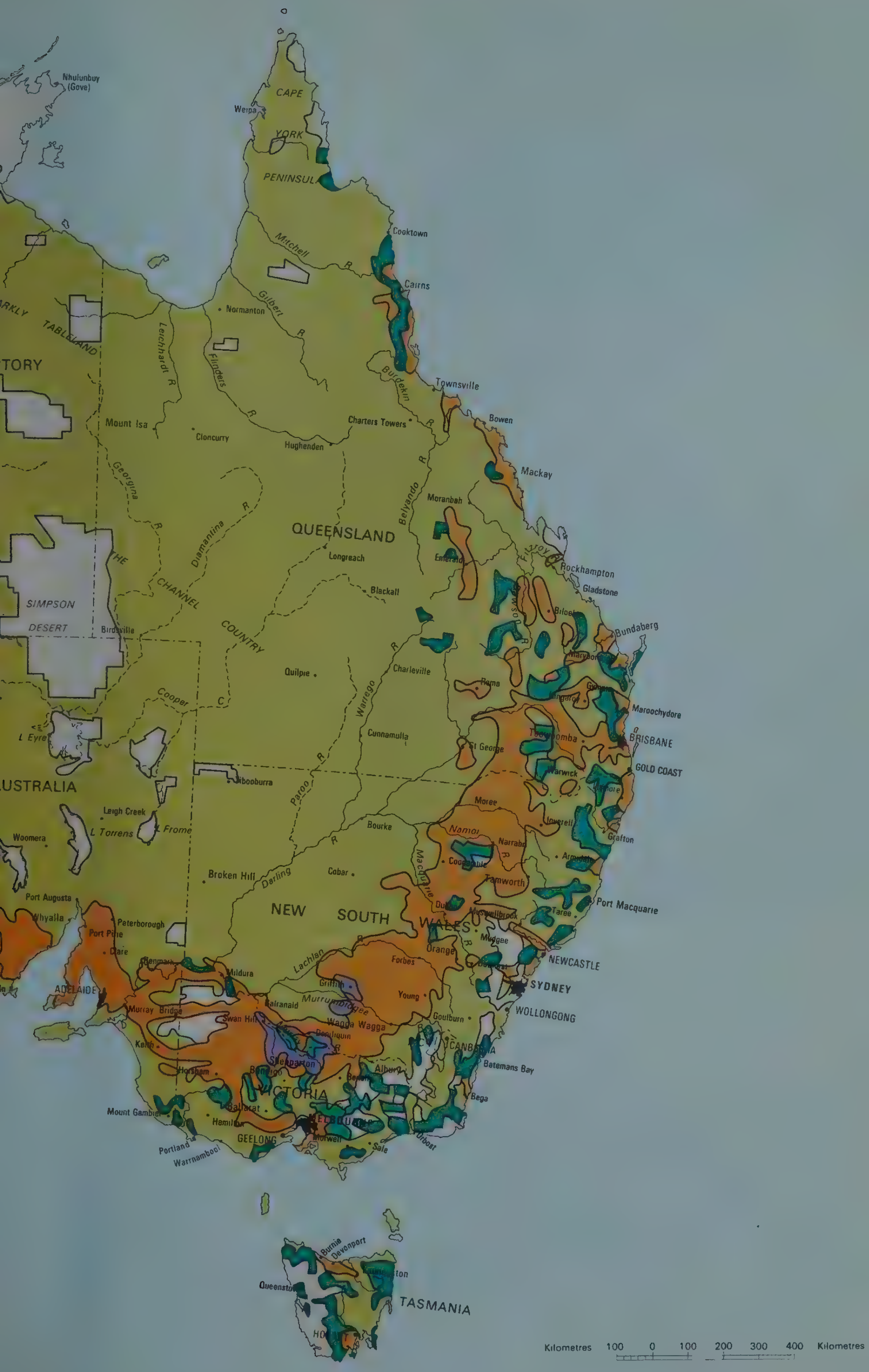
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Cooktown
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TORY
Leichhardt R
Flinders R
Burdekin R
Townsville
Bowen
Mount Isa
Cloncurry
Charters Towers
Hughenden
Mackay
Georgina R
Moranbah
Belyando R
Diamantina R
QUEENSLAND
Fitzroy R
Rockhampton
Emerald
Longreach
Gladstone
THE CHANNEL COUNTRY
Blackall
SIMPSON DESERT
Birdsville
Biloela
Bundaberg
Maryborough
Gympie
Rama
Quilpie
Charleville
Warrego R
Maroochydore
Cooper C
Toowoomba
BRISBANE
L Eyre
Cunnamulla
St George
Warwick
GOLD COAST
USTRALIA
Tibooburra
Paroo R
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Moree
Leigh Creek
Inverell
Bourke
Namoi
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Grafton
Woomera
Narrabri
Armidale
Gunnedah
Cobar
Macquarie R
Broken Hill
Darling R
Tamworth
Port Macquarie
Port Augusta
Dubbo
Taree
Whyalla
Muswellbrook
NEW SOUTH WALES
Peterborough
Port Pirie
Mudgee
Clare
Orange
NEWCASTLE
Forbes
Renmark
Bathurst
Mildura
Lachlan
SYDNEY
ADELAIDE
Griffith
Young
WOLLONGONG
Murray Bridge
Balranald
Murrumbidgee
Goulburn
Swan Hill
Wagga Wagga
Deniliquin
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ACT
CANBERRA
Keith
Shepparton
Batemans Bay
Horsham
Bendigo
Benalla
Albury
VICTORIA
Bega
Mount Gambier
Ballarat
Hamilton
MELBOURNE
Orbost
GEELONG
Morwell
Portland
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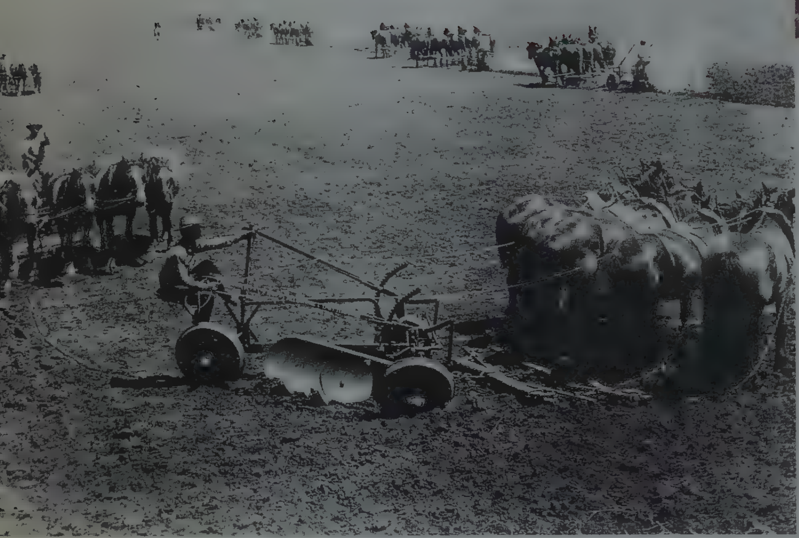
Harvesting wheat in Northern N.S.W.

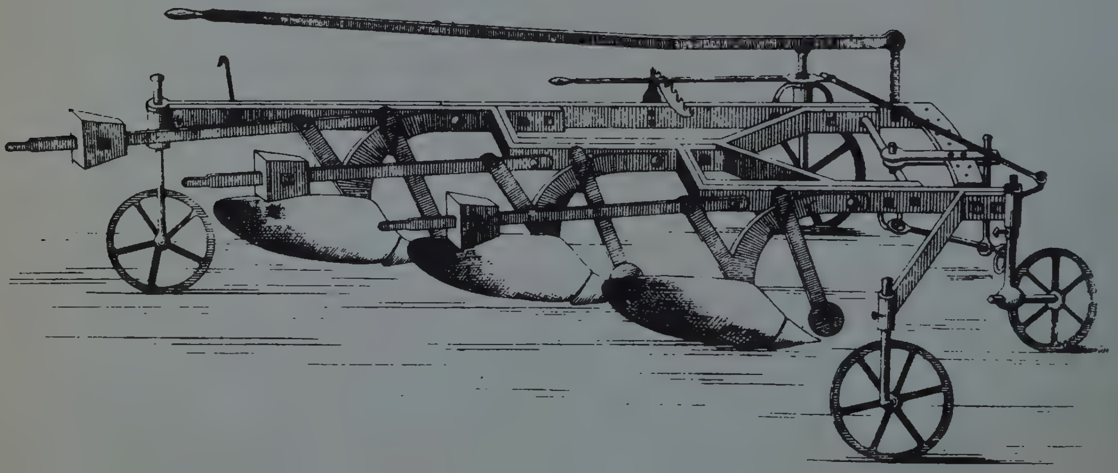
A prize winning Merino ram.



Disc ploughs and horse teams—once a familia
sight in the wheatfields of Australia.

Photographs— Promotion Australia.

The first "stump jumping" plough, the vixen, a three furrow version made by the Smith Brothers in 1876.



for oil. Crushings may vary between 3,000 and 7,000 tonnes per annum depending on the quality of the crop. Peanut oil is a high quality oil which is used in the manufacture of margarine and in compound cooking fats and is also used as a cooking and salad oil.

Peanuts

The major peanut growing areas are around Kingaroy in south-east Queensland and the Atherton Tablelands in North Queensland, with smaller pockets of production around Tweed Heads in New South Wales and around Douglas in the Northern Territory.

About 80 per cent of peanuts grown in Australia are of Virginia variety, the remainder being of Spanish types.

Although area planted to peanuts has stabilised in recent years at around 25,000 to 33,000 hectares, production has fluctuated depending on seasonal conditions. Output in 1985–86 is estimated to total some 43,500 tonnes compared with 42,400 tonnes produced in 1984–85.

Local demand for peanuts and peanut products is comparatively static with a limited potential for growth corresponding to population growth. The local growing industry normally supplies most of the domestic demand for edible peanuts in its major outlets: peanut butter, packaged trade and confectionery. Any surplus is sold on export markets. Exports vary according to the size of the crop.

SELECTED OILSEED CROPS: AREA, PRODUCTION AND GROSS VALUE

Year	*Sunflower*	*Soybeans*	*Rapeseed*	*Safflower*	*Linseed*	*Total*
			AREA ('000 hectares)			
1980–81	197.7	39.6	23.6	18.3	10.0	289.2
1981–82	177.5	40.5	15.7	33.4	6.6	273.7
1982–83	176.1	48.3	12.4	11.5	4.9	253.2
1983–84	233.5	48.1	17.8	54.9	5.3	359.6
1984–85	354.0	63.1	30.0	44.3	5.6	497.0
1985–86	276.9	70.7	74.2	47.4	10.2	479.3
			PRODUCTION ('000 tonnes)			
1980–81	139.0	73.2	17.2	8.1	7.4	244.9
1981–82	115.1	77.1	14.5	19.6	6.0	232.3
1982–83	104.0	53.2	6.7	5.3	2.5	171.7
1983–84	170.4	88.6	17.2	30.6	4.3	311.1
1984–85	292.7	109.8	32.4	32.3	5.7	472.9
1985–86	214.9	105.2	87.0	27.7	12.1	446.9
			GROSS VALUE ($ million)			
1980–81	34.3	22.4	4.5	2.2	2.2	65.6
1981–82	28.3	19.8	3.3	5.2	1.6	58.2
1982–83	27.2	16.3	1.6	1.6	0.7	47.4
1983–84	58.9	26.9	5.0	7.8	1.3	99.9
1984–85	88.3	35.8	9.9	8.2	1.9	144.1
1985–86	53.1	28.0	24.1	6.1	3.7	115.0

PEANUTS: AREA, PRODUCTION AND GROSS VALUE

Year	*Area*	*Production*	*Gross value*
	'000 hectares	'000 tonnes	$ million
1980–81	27.1	43.2	36.6
1981–82	33.4	57.6	37.0
1982–83	35.9	23.3	17.8
1983–84	32.3	47.2	40.2
1984–85	30.0	42.4	36.6
1985–86	29.2	43.4	38.1

Cotton

Cotton is grown primarily for its fibre (lint). When the cotton is matured, seed cotton is taken to a gin where it is separated (ginned) into lint, seed and thrash. Lint is used for yarn while seed is further processed at an oil mill. There the short fibres (linters) remaining on the seed after ginning are removed. They are too short to make into cloth but are used for wadding, upholstery and paper. The seeds are then separated into kernels and hulls. Hulls are used for stock feed and as fertiliser, while kernels are crushed to extract oil. The remaining cake is ground into meal which is protein roughage used as stock feed.

Over three-quarters of Australia's total production of cotton lint is grown in New South Wales, principally in the Namoi, Macquarie, Gwydir and McIntyre Valleys and the Bourke area. Irrigation water for these areas is provided from the Keepit, Burrendong, Copeton and Glenlyon Dams and the Darling River. The rest is grown in Queensland, in the Emerald, Biloela, St George, and Darling Downs areas. Most of these areas are also irrigated. Australian production has for some time satisfied most of the requirements of local mills for short and medium staple cotton. Since the mid-1970s there has been very strong investment growth in the cotton industry and the resultant surge in plantings has resulted in large amounts of cotton becoming available for export.

COTTON: AREA, PRODUCTION AND EXPORTS

		Seed cotton (a)				*Raw cotton export*	
Year	*Area*	*Quantity*	*Gross value*	*Cottonseed (b)*	*Lint(c)*	*Quantity*	*Value f.o.b.*
	'000 ha	'000 tonnes	$m	'000 tonnes	'000 tonnes	'000 tonnes	$m
1980–81	77.9	236.6	147.2	161.2	98.9	58.7	92.1
1981–82	92.3	324.9	182.0	219.0	134.0	79.2	117.2
1982–83	96.4	285.6	167.5	164.0	101.0	129.2	197.6
1983–84	137.4	400.5	268.8	230.0	141.0	81.5	147.9
1984–85	183.1	679.4	330.2	410.4	248.7	139.7	259.6
1985–86	177.1	684.7	324.9	366.0	256.7	241.2	378.4

(*a*) Before ginning. (*b*) Estimated by the Australian Bureau of Agricultural and Resource Economics. (*c*) Provided by the Raw Cotton Marketing Advisory Committee.

Sugar

Sugar cane is grown commercially in Australia along the east coast over a distance of some 2,100 kilometres in a number of discontinuous areas from Maclean in northern New South Wales to Mossman in Queensland. The geographical spread contributes to the overall reliability of the sugar cane crop and to Australia's record as a reliable sugar supplier.

Approximately 95 per cent of production occurs in Queensland, with some 75 per cent of the crop grown north of the Tropic of Capricorn in areas where rainfall is reliable and the warm, moist and sunny conditions are ideal for the growing of sugar cane. Farm sizes range between 20 and 70 hectares.

Australian cane farmers are regarded as amongst the most efficient in the world and employ a high degree of mechanisation in ploughing, planting, harvesting, and transportation activities. The Australian industry was the first in the world to introduce mechanical cultivation and harvesting techniques and by 1964 the entire industry had converted to bulk handling.

The cane crop is generally planted in April/May and harvested from June to December the following year. The major proportion of each year's crop is from ratoons while in New South Wales most crops are allowed to grow for two seasons due to the slower growing conditions.

The organisation of the Australian sugar industry is complex. The Queensland Government controls the quantity of raw sugar produced through a system of mill peaks which is translated into cane quotas for growers. In addition the Queensland Government contracts with CSR Limited and Millaquin Sugar Company Pty Limited for the refining, marketing and distribution of home consumption needs, arranges through CSR Limited the export marketing of raw sugar, and regulates the division of industry proceeds between growers and millers.

There are 33 raw sugar mills located throughout the growing regions: 30 are located in Queensland and the remaining three in New South Wales. Fifteen of the mills are co-operatively owned by canegrowers and the remaining eighteen by proprietary companies. Refineries are located in each mainland capital city and at Bundaberg. The six bulk sugar export terminals located in Queensland are at present capable of storing 2.9 million tonnes. While raw sugar is the main product from mills, important by-products are bagasse (fibre), molasses, ash and filter mud.

In recent years sugar cane production has been around 24 million tonnes yielding between 2.8 and 3.3 million tonnes of sugar. Area, production and yield levels for sugar cane from 1980–81 to 1985–86 are provided in the following table.

SUGAR CANE: AREA, PRODUCTION AND YIELD

	New South Wales					*Queensland*				
	Sugar cane cut for crushing			*Raw sugar(a)*		*Sugar cane cut for crushing*			*Raw sugar(a)*	
Year	*Area harvested*	*Production*	*Yield*	*Quantity*	*Yield*	*Area harvested*	*Production*	*Yield*	*Quantity*	*Yield*
	'000 ha	'000 tonnes	t/ha	'000 tonnes	t/ha	'000 ha	'000 tonnes	t/ha	'000 tonnes	t/ha
1980–81 . . .	14.0	1,435.3	102.4	181.2	12.9	274.3	22,540.4	82.2	3,148.5	11.5
1981–82 . . .	14.3	1,505.9	105.4	184.7	12.9	301.7	23,587.9	78.2	3,250.4	10.8
1982–83 . . .	16.0	1,702.3	106.5	175.9	11.0	302.5	23,114.8	76.4	3,324.2	11.0
1983–84 . . .	15.2	1,468.4	96.7	159.0	10.5	292.0	22,723.0	77.8	3,011.6	10.3
1984–85 . . .	14.9	1,540.5	103.6	198.9	13.4	297.8	23,910.0	80.3	3,349.2	11.2
1985–86 . . .	15.3	1,398.2	91.1	170.0	11.1	288.3	23,003.5	79.8	3,208.6	11.1

(*a*) In terms of 94 net titre.

The domestic market is reserved entirely for sugar produced in Australia. This is achieved by an embargo on the import of sugar. The maximum price of refined sugar for sale to wholesalers and manufacturers is fixed each six months under a formula contained in the Commonwealth/Queensland Sugar Agreement.

Domestic sales account for about 760,000 tonnes annually or approximately 20 per cent of the total industry sales. Granulated sugars account for about 75 per cent of the total domestic sales with liquid sugars (15 per cent), castor sugar (5 per cent), and raw sugar taking up the bulk of the remainder. About two-thirds of the sales of refined sugar products go to processed food and drink manufacturers.

The Australian sugar industry exports about 75 per cent of its annual raw sugar production and is one of the world's largest sugar exporters. The disposal pattern of Australia's sugar production is shown in the following table.

SUGAR: AREA, PRODUCTION, EXPORTS AND CONSUMPTION

	Production				*Exports*		*Apparent consumption in Australia(a)*	
	Sugar cane			*Raw sugar*	*Raw and refined sugar*			
Year	*Area harvested*	*Quantity*	*Gross value*	*Quantity*	*Quantity*	*Value f.o.b.*	*Total*	*Per head*
	'000 ha	mil. tonnes	$m	mil. tonnes	mil. tonnes	$m	'000 tonnes	kg
1980–81	288.3	24.0	799.7	3.3	2.6	1,146.2	721.4	48.7
1981–82	315.9	25.1	590.2	3.4	2.5	777.7	710.7	47.2
1982–83	318.5	24.8	508.9	3.5	2.5	557.7	703.0	46.0
1983–84	307.1	24.2	516.6	3.2	2.4	621.3	679.5	43.9
1984–85	312.6	25.4	512.2	3.5	2.5	572.2	692.4	44.2
1985–86	303.7	24.4	494.2	3.4	2.7	613.2	714.1	45.0

(*a*) Total quantity of sugar available for consumption in Australia comprises refined sugar and refined sugar contained in manufactured foods.

Australia has regularly participated in arrangements to regulate the international sugar market and was a signatory to the 1984 International Sugar Agreement (ISA). The Agreement is an administrative pact only, and unlike previous Agreements contains no economic provisions. This means that member countries are not constrained in their sugar exports.

Vegetables

Vegetables for human consumption

The area sown to vegetables reached a peak of over 200,000 hectares in 1945, but has remained static at around 109,000 hectares since 1975–76. However, yields from most vegetable crops have increased due to variety breeding for increased yields, greater use of irrigation and better control of disease and insect pests.

Because of the wide climatic range in Australia, supplies for main city markets are drawn from widely different areas, depending on the times of maturity of the various crops. Historically, market gardens were located near urban centres and, while many small scale growers still produce crops close to city markets, urban expansion, rising urban land values, improvements in transport and irrigation, and developments in freezing, canning and drying have extended the industry far from the cities. Transport costs are reduced by the location of processing establishments in producing areas, although city markets still absorb the bulk of fresh and processed produce.

For further information on vegetables *see Year Book* No. 70.

APPARENT CONSUMPTION OF VEGETABLES

(kilograms per capita per year)

Year	*Potatoes*	*Other root and bulb vegetables*	*Tomatoes*	*Leafy and green vegetables*	*Other vegetables*	*Total, fresh equivalent weight*
1980–81	54.9	16.3	15.7	21.8	17.5	126.3
1981–82	57.6	18.7	16.7	20.8	17.1	130.8
1982–83	52.2	16.9	16.5	21.4	17.9	124.9
1983–84	62.6	17.4	18.6	21.9	18.3	138.8
1984–85	59.9	19.3	19.6	22.5	21.0	142.4
1985–86	57.7	18.9	16.9	22.8	20.0	136.2

VEGETABLES FOR HUMAN CONSUMPTION: AREA AND PRODUCTION

Year	*French and runner beans*	*Cabbages*	*Carrots*	*Cauli-flowers*	*Onions*	*Green peas*	*Potatoes*	*Tomatoes*	*Total vege-tables*
				AREA ('000 hectares)					
1980–81	(*a*)6.3	2.4	3.7	(*a*)2.8	4.0	(*a*)10.8	35.7	9.1	103.0
1981–82	7.1	(*a*)2.4	3.9	3.1	4.0	12.1	(*a*)36.1	9.1	106.7
1982–83	6.7	2.5	3.8	3.3	4.2	14.8	(*a*)37.4	8.7	110.3
1983–84	6.7	2.5	4.3	3.4	3.8	12.2	37.9	9.1	109.9
1984–85	6.3	2.4	4.6	3.6	4.4	11.4	38.4	9.3	111.0
1985–86	5.9	2.3	4.3	3.6	4.5	11.2	36.1	9.5	110.7

Year	*French and runner beans*	*Cabbages*	*Carrots*	*Cauli-flowers*	*Onions*	*Green peas*		*Potatoes*	*Tomatoes*
						Process-ing (shelled weight)	*Sold in pod (pod weight)*		
				PRODUCTION ('000 tonnes)					
1980–81	(*a*)34.0	76.1	112.6	(*a*)79.2	114.8	(*a*)32.6	(*a*)1.5	865.8	216.8
1981–82	(*a*)34.6	(*a*)71.0	112.5	85.4	127.4	38.4	1.7	(*a*)918.6	228.4
1982–83	33.5	67.2	105.0	76.5	129.0	46.0	1.9	858.5	224.1
1983–84	32.3	72.3	124.3	84.4	115.9	44.0	2.1	1,019.8	258.3
1984–85	31.1	69.5	130.6	101.1	151.7	41.8	2.1	992.1	270.5
1985–86	31.3	70.4	127.6	103.8	159.7	39.7	1.5	964.9	252.6

(*a*) Incomplete, information on this commodity was not separately collected in some States.

For further information on vegetables *see* the following publications: *Crops and Pastures, Australia* (7321.0), *Apparent Consumption of Foodstuffs and Nutrients, Australia* (4306.0) *Value of Agricultural Commodities Produced, Australia* (7503.0), and *Year Book* No. 70.

Fruit (excluding grapes)

A wide variety of fruit is grown in Australia ranging from pineapples, mangoes and papaws in the tropics to pome, stone and berry fruits in the temperate regions.

In recent years there has been rapid expansion in the cultivation of many relatively new fruit crops in Australia and there is considerable scope for continued growth in the future.

Avocado is perhaps the most commonly known of these crops and production has expanded considerably during the past decade to a current gross value of over $10m. Avocado production is mainly in Queensland and New South Wales with minor quantities produced in Western Australia, South Australia and Victoria.

Kiwifruit is a relatively new temperate fruit crop to Australia. Production has been expanding rapidly mainly in Victoria and New South Wales and further expansion is expected. Of the berry fruits, strawberries are widely grown, with largest production in Victoria and Queensland. Interest in the production of blueberries in Australia has developed only recently and plantings of blueberries have increased rapidly mainly in Victoria and New South Wales. Other berries (currants and raspberries) are grown predominantly in Tasmania and production has been reasonably constant over the past five years.

Tropical fruit such as mangoes, papaws, passionfruit, custard apples and guavas, are grown mainly in Queensland. Smaller quantities of tropical fruit are produced in the north coast region of New South Wales, Western Australia and more recently the Northern Territory. The largest expansion has been of mango production which has more than doubled since 1979. Given the large number of non-bearing mango trees production is expected to continue to increase dramatically. There is also considerable interest in many other exotic tropical and subtropical fruits. Production of lychees and persimmons has recently commenced and some plantings of rambutan, sapote and longans have been made, mainly in Queensland and the north coast region of New South Wales.

Almond is still the major nut crop in Australia with almost the entire almond crop produced in South Australia and Victoria. Pecan nut production increased substantially in the 1970s, mainly in northern New South Wales. More recently plantings of pistachio trees have commenced in South Australia, Victoria, New South Wales and Western Australia. The major expansion in the nut crops has been with macadamias, a native Australian tree. The main growing regions are the coastal region of northern New South Wales and southern Queensland. During the past decade production of macadamia nuts has increased rapidly to a current gross value of about $4 million.

SELECTED FRUIT STATISTICS

	Orchard fruit: number of trees('000)				*Tropical and other fruits: area (ha)*			*Total area of fruit (ha)*
Year	*Apples*	*Oranges*	*Pears*	*Peaches*	*Bananas*	*Pineapples*	*Other fruit*	
1980–81 . . .	6,099	5,872	1,622	1,649	8,558	6,583	1,831	100,516
1981–82 . . .	6,065	6,055	1,703	1,669	8,740	6,373	1,738	102,068
1982–83 . . .	6,098	6,219	1,556	1,642	9,040	6,010	1,774	104,325
1983–84 . . .	6,066	6,397	1,584	1,646	9,282	6,011	2,085	107,534
1984–85 . . .	6,147	6,657	1,548	1,696	9,205	6,268	2,272	109,095
1985–86 . . .	6,397	6,777	1,592	1,793	9,640	6,325	2,432	112,655

Year	*Apples*	*Apricots*	*Bananas*	*Cherries*	*Oranges*	*Peaches*	*Pears*	*Pine-apples*	*Plums and Prunes*
				PRODUCTION ('000 tonnes)					
1980–81 . .	306.9	30.6	124.3	6.5	424.5	79.2	145.6	123.3	20.8
1981–82 . .	294.5	27.1	129.6	5.4	376.3	64.6	109.7	125.5	16.4
1982–83 . .	300.8	26.9	140.5	4.2	410.0	63.0	119.2	111.3	20.6
1983–84 . .	267.0	23.6	146.4	3.5	391.8	48.3	122.1	115.1	20.0
1984–85 . .	352.0	24.5	144.8	3.8	445.0	59.8	138.5	124.5	20.6
1985–86 . .	292.1	29.6	134.4	3.9	496.2	61.4	142.9	131.6	21.7
				GROSS VALUE OF PRODUCTION ($ million)					
1980–81 . .	118.9	16.9	59.5	10.0	86.0	25.7	41.4	19.8	15.2
1981–82 . .	124.2	18.1	61.4	13.2	89.6	23.0	30.8	20.5	11.2
1982–83 . .	132.4	18.3	70.1	7.9	101.0	21.3	41.9	25.4	16.9
1983–84 . .	134.1	17.6	86.8	8.7	105.3	25.4	45.9	26.2	17.5
1984–85 . .	178.3	19.7	93.2	10.8	131.9	28.3	50.7	33.5	19.8
1985–86 . .	139.0	24.5	101.7	9.5	132.5	29.3	63.7	32.6	23.5

Processed fruit and fruit products

After rapid expansion in the 1960s, output of canned fruit declined and then levelled off due to the effects of contracting overseas markets for Australian canned fruit. Production of natural fruit juices has increased markedly in the last decade and this has reflected improvements in marketing methods, effective promotion and public awareness of the nutritional value of natural juices.

FRUIT PRODUCTS

(Derived from the Annual Manufacturing Census and the recorded monthly production)

	Unit	*1980–81*	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*
Fruit juice based cordials and syrups(*a*)	ML	77.8	80.4	78.7	86.5	101.1	98.1
Natural fruit juice(*b*)—							
Single strength	ML	232.6	186.5	201.1	214.1	317.7	n.y.a.
Concentrated(*c*)	ML	32.6	27.3	32.6	26.5	43.6	
Cider and perry	ML	15.0	19.0	18.4	(*d*)9.4	(*d*)9.8	
Canned or bottled fruit (excl. canned pulp)	'000 tonnes	226.4	146.7	157.6	152.0	186.2	179.2
Jams	'000 tonnes	29.1	32.6	29.3	30.3	29.8	29.5

(*a*) Containing at least 25 per cent by volume of pure fruit juices. (*b*) Excludes fruit drinks consisting of diluted fruit juices with or without artificial flavourings. (*c*) Excludes grape must, and comprises actual quantity of concentrated juices. (*d*) Excludes alcoholic cider and perry.

APPARENT CONSUMPTION OF FRUIT AND FRUIT PRODUCTS

(kg per capita per year)

	Fresh						
Year	*Oranges*	*Other citrus*	*Other fresh fruit*	*Jams, conserves, etc.*	*Dried tree fruit*	*Processed fruit*	*Total, fresh equivalent weight*
1980–81	31.7	7.5	35.5	1.5	0.4	11.9	99.9
1981–82	29.5	6.9	37.8	1.8	0.5	10.3	97.4
1982–83	41.4	6.4	39.6	1.8	0.6	9.4	110.6
1983–84	43.4	7.7	38.1	1.8	0.7	9.8	113.3
1984–85	37.8	7.5	41.4	2.1	0.6	11.1	114.6
1985–86	33.7	7.1	42.1	1.9	0.6	8.0	106.9

Fruit exports

The value of exports of fruit and fruit products (excluding grapes) has in most recent years accounted for more than a quarter of the value of the production of fresh fruit. Fresh or chilled fruit (mostly apples, pears and citrus) account for some 40 per cent of this; preserved fruit (mostly canned pears and peaches) make up most of the remainder; only small quantities of dried fruits (other than grapes) are exported. The total value of those exports has been relatively constant in recent years.

FRUIT EXPORTS: VALUE F.O.B.

($ million)

	Fresh and chilled			*Canned or bottled*					
Year	*Apples*	*Pears*	*Oranges*	*Apricots*	*Peaches*	*Pears*	*Peaches and pears*	*Pine-apples*	*Fruit salad*
1980–81	15.3	20.0	8.0	1.3	16.0	20.6	3.0	3.5	9.6
1981–82	19.0	13.7	8.9	1.0	15.4	13.7	2.1	3.6	7.5
1982–83	15.7	17.8	12.6	1.1	13.8	16.5	2.4	2.2	9.8
1983–84	13.7	15.9	9.4	1.2	13.4	10.9	1.8	2.5	10.7
1984–85	12.0	21.3	14.4	0.4	12.1	17.9	1.4	3.9	10.2
1985–86	17.7	28.5	18.9	0.8	19.3	17.8	1.9	5.2	14.6

Fresh apple exports to Europe have been markedly reduced in recent years mainly because of rising shipping costs and improved storage techniques in Europe. On the other hand, markets in other areas such as South East Asia and the Middle East have been maintained in most years. Fresh pear exports to Europe have also declined but not to the same extent as apples. Other export markets for pears, such as South East Asia, have gained importance in recent years. Exports of citrus, predominantly oranges, were relatively steady at around 30,000 tonnes for the five years to 1984–85 but increased rapidly to an estimated 50,000 tonnes in 1986–87. Citrus exports are sensitive to competition from the U.S.A. Exports of oranges were made to Japan for the first time in 1983–84, and sales in subsequent years have been steadily expanding. The Australian industry believes there is a potentially very important trade with Japan.

FRUIT: VALUE OF PRODUCTION AND EXPORTS

($ million)

	Gross value			
Year	*Orchard fruit*	*Tropical, berry and other*	*Total*	*Exports(a) value f.o.b.*
1980–81	366	94	460	131
1981–82	365	99	464	122
1982–83	396	113	509	135
1983–84	418	135	552	117
1984–85	522	149	671	152
1985–86	518	161	679	196

(*a*) Fruit and nuts, excluding grapes (fresh and dried); includes fresh, dried and preserved and fruit preparations.

Fruit imports

Small but increasing quantities of fresh fruit, mainly off-season citrus from the U.S.A., are imported, while most imports of dried fruit consist of dates from China and Pakistan and dried apricots from Turkey. Imports of orange juice increased to a peak of 106 million litres in 1983–84, but have since declined to 55 million litres in 1985–86.

Marketing and regulation of the fruit industry

Apples and pears

The Australian Apple and Pear Corporation has the function of promoting and controlling the export of Australian apples and pears as well as the promotion of trade and commerce in apples and pears within Australia. It also has power to promote, or engage in, research relating to the production, packaging, handling, transportation or marketing of apples and pears and to promote new apple and pear products.

The current underwriting schemes for export apples and pears terminate at the end of the 1990 export season. Under the schemes, the government guarantees a minimum export return separately for 'at risk' and forward sales of apples and pears which is equal to 85 per cent of the average export returns in the last three of the previous four years. If the average export return for any of the four categories of exports should fall below the bigger price in any year, the government will make up the difference without limit.

Canned fruit

On 29 November 1979 the Commonwealth enacted legislation restructuring the industry's marketing arrangements. Similar complementary legislation has been enacted by the four States of New South Wales, Victoria, South Australia and Queensland.

Under the legislation, the Australian Canned Fruits Corporation (replacing the Australian Canned Fruits Board) is empowered to acquire and sell the production of canned apricots, peaches and pears and is responsible for determining prices, terms and conditions for sales in both Australian and export markets. Sales are made through markets nominated by canners and approved by the Corporation. Markets are classified as Pool and Non-Pool with returns from Pool markets equalised by the Corporation. Entitlements for sales in Pool markets are allocated to canners prior to the start of each season.

The Corporation's administrative expenses are financed by a levy imposed on the production of canned fruits under the *Canned Fruits Levy Act 1979.*

The Corporation is advised in the performance of its functions by the Australian Canned Fruits Industry Advisory Committee.

In October 1984, the operation of the Australian Canned Fruits Corporation (ACFC) was extended for a further three years to the end of 1987. A more commercially orientated and flexible corporation was achieved with the expansion of the Corporation's board to make it more effective in its commercial operations, more accountable to industry and government and more capable of achieving its objective of improving returns to growers.

For further data on fruits and fruit products *see* the publications *Fruit, Australia* (7322.0), *Production Bulletin No. 3: Food, Drink and Tobacco, Australia* (8359.0), *Apparent Consumption of Foodstuffs and Nutrients, Australia* (4306.0) and *Value of Agricultural Commodities Produced, Australia* (7503.0).

Grapes

Grapes are a temperate crop which require warm to hot summer conditions for ripening and predominantly winter rainfall. Freedom from late spring frosts is essential. They are grown for wine-making, drying and, to a lesser extent, for table use. Some of the better known wine producing areas are the Barossa, Clare, Riverland, Southern Districts and Coonawarra (S.A.); North Eastern Victoria and Great Western (Vic.); Hunter and Riverina (N.S.W.); Sunraysia (N.S.W. and Victoria); Swan Valley and Margaret River (W.A.).

Nearly all the dried fruit is produced along the River Murray and its tributaries in Victoria and New South Wales with small localised areas in other States.

VITICULTURAL STATISTICS: AREA, PRODUCTION AND VALUE

	Area		*Production: grapes used for—*			
					Total (a)	
Year	*Bearing*	*Total*	*Winemaking*	*Drying*	*Quantity*	*Gross value*
	'000 ha	'000 ha	'000 tonnes fresh weight	'000 tonnes fresh weight	'000 tonnes fresh weight	$m
1980–81	64.7	69.5	473.1	248.1	743.4	178.2
1981–82	63.7	68.4	499.9	361.7	884.9	222.8
1982–83	61.9	66.5	431.3	310.3	768.1	212.5
1983–84	60.2	64.5	495.1	320.0	840.9	217.0
1984–85	59.9	64.0	559.0	296.8	889.6	259.4
1985–86	60.0	63.8	509.9	358.8	906.6	270.0

(*a*) Includes grapes used for table and other purposes.

Multipurpose grapes are used predominantly for winemaking and drying, the latter process being particularly suspectible to adverse seasonal conditions. A serious oversupply of dried vine fruit existed on world markets in 1983 and 1984, however the situation has improved since 1985 as a consequence of reduced production from northern hemisphere suppliers in late 1984. Australian exporters have made significant sales on international markets. The Australian Dried Fruits Corporation is the body responsible for the organisation of the export trade in dried vine fruits. The Corporation also administers the statutory Dried Vine Fruits Equalisation Scheme and the Dried Sultana Production Underwriting Scheme. Both these schemes were restructured by the Government in 1985 following an inquiry into the dried vine fruits industry by the Industries Assistance Commission. The Government's objective was to make the industry more responsive to market signals. Until 1983, imports of dried vine fruit had been largely insignificant. However, since that time significant imports have occurred each year, the major sources being Greece and the U.S.A. The Australian industry has demonstrated injury from subsidised imports from Greece and countervailing measures have been implemented.

Varietal statistics: 1986 season

VITICULTURE: AREA AND PRODUCTION BY VARIETY, 1986 SEASON *(a)*

	Area of vines at harvest			*Grubbings (actual and/or intended)*	*Production*			
					Grapes used for—			
	Bearing	*Not yet bearing*	*All vines*		*Wine-making*	*Drying*	*Other*	*Total*
	—hectares—			hectares	—tonnes (fresh weight)—			
Red grapes—								
Cabernet Sauvignon	3,535	345	3,880	106	26,033	—	11	26,044
Currant (incl. Carina)	1,603	132	1,735	67	86	25,664	59	25,809
Grenache	3,136	16	3,152	338	33,264	—	196	33,459
Mataro	932	4	936	69	10,717	—	92	10,809
Pinot Noir	438	194	632	5	2,765	—	1	2,766
Shiraz	5,865	89	5,953	368	52,684	—	80	52,765
Other red grapes	2,905	534	3,439	138	11,073	13	10,926	22,012
Total red grapes	*18,413*	*1,315*	*19,728*	*1,091*	*136,623*	*25,677*	*11,363*	*173,663*
White grapes—								
Chardonnay	1,967	653	2,621	30	17,442	—	4	17,445
Doradillo	1,320	13	1,332	92	28,987	598	83	29,667
Muscat Blanc	553	59	612	44	5,656	—	86	5,742
Muscat Gordo Blanco	4,111	340	4,451	135	75,906	8,265	431	84,601
Palomino and Pedro Ximenes	1,938	20	1,959	193	27,825	—	19	27,844
Rhine Riesling	4,250	138	4,388	230	44,053	—	2	44,055
Semillon	2,735	191	2,926	92	38,629	—	10	38,638
Sultana	16,863	413	17,276	438	51,199	313,241	16,149	380,589
Waltham Cross	1,488	36	1,524	109	3,331	10,834	5,093	19,259
Other white grapes	6,331	601	6,933	381	80,283	162	4,653	85,099
Total white grapes	*41,557*	*2,466*	*44,023*	*1,744*	*373,311*	*333,100*	*26,529*	*732,940*
Total grapes	**59,970**	**3,781**	**63,750**	**2,835**	**509,934**	**358,777**	**37,892**	**906,603**

(a) Varietal data not collected in Northern Territory and the Australian Capital Territory.

DRIED VINE FRUIT: PRODUCTION, EXPORTS AND CONSUMPTION
(dried weight)

Year	*Production*				*Exports*				*Consumption of dried vine fruit*
							Total		
	Raisins	*Sultanas*	*Currants*	*Total*	*Raisins/ sultanas*	*Currants*	*Quantity*	*Value f.o.b.*	
	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	$m	kg
1980–81	5.7	50.7	4.8	61.1	50.1	1.9	52.0	75.5	1.8
1981–82	5.8	78.5	5.9	90.2	38.5	0.8	39.4	49.5	1.8
1982–83	3.9	64.9	4.7	73.4	57.1	2.4	59.5	59.7	1.9
1983–84	1.4	69.0	4.6	75.0	51.6	0.9	52.5	54.1	1.7
1984–85	2.1	60.1	5.7	67.8	61.5	1.0	62.4	58.0	2.3
1985–86	5.2	72.9	6.3	84.4	48.4	2.9	51.3	71.3	2.3

Wine industry

Australia produces a wide range of wine and brandy products. Over the past twenty years there has been a distinct trend towards greater production and consumption of unfortified or table wines. In the twelve months ending June 1986 sales of table wine accounted for nearly 78 per cent of all sales of Australian wine. The large growth in table wine sales has been principally due to the successful marketing of wine in 'casks' (usually fibreboard, box-shaped, 4 litre containers equipped with dispensing faucets).

Exports and imports of wine are relatively insignificant accounting respectively for 2.5 per cent of production and 3.7 per cent of the apparent domestic market for wine. Legislation reconstructing the Australian Wine and Brandy Corporation as the body responsible for the control of the export trade in wine, brandy and grape spirit products was enacted in June 1986. The Corporation has the power to regulate exports as well as organise promotion and publicity functions in export markets and in Australia.

PRODUCTION, CONSUMPTION AND EXPORT OF WINES

Year	Production	Exports: Quantity	Exports: Value f.o.b.	Consumption in Australia per capita
	mil. litres	mil. litres	$m	litres
1980–81	374.3	7.5	11.9	18.2
1981–82	402.7	8.4	14.0	19.1
1982–83	340.1	8.0	13.4	19.7
1983–84	396.2	9.0	16.8	20.4
1984–85	451.2	8.8	17.4	21.3
1985–86	389.2	10.9	21.3	21.6

For further details on viticulture, dried vine fruit, wine, etc. *see* the following publications: *Fruit, Australia* (7322.0), *Sales and Stocks of Australian Wine and Brandy* (8504.0) and *Viticulture, Australia* (7310.0).

Miscellaneous crops

The principal crops not covered above include fodder crops, tobacco, hops and mushrooms which in 1985–86 had gross values as follows:

Crops	Gross value	Per cent of total crop gross value
	$m	%
Fodder crops (hay)	64.5	0.9
Lupins	81.6	1.1
Tobacco	58.0	0.8
Hops	9.4	0.1
Mushrooms	43.8	0.6
Other (incl. nurseries)	331.1	4.5

Fodder crops

As well as crops specifically for grain, considerable areas of Australia are devoted to fodder crops. These crops are utilised either for grazing (as green feed), or conserved as hay, ensilage, etc.

This development of fodder conservation as a means of supplementing pasture and natural sources of stockfeed is the result of the seasonal and comparatively unreliable nature of rainfall in Australian agricultural areas.

FODDER CROPS: AREA AND PRODUCTION

Year	Hay(a): Area	Hay(a): Production: Quantity	Hay(a): Production: Gross value	Green feed or silage(b): Area	Green feed or silage(b): Silage made
	'000 ha	'000 tonnes	$m	'000 ha	'000 tonnes
1980–81	320	826	58.3	1,096	338
1981–82	380	1,043	77.1	936	413
1982–83	408	907	100.6	1,292	301
1983–84	377	1,269	99.5	896	698
1984–85	258	848	60.3	876	502
1985–86	268	820	64.5	1,062	620

a) Principally oaten and wheaten hay. (b) Principally from oats, barley, wheat and forage sorghum.

Lupins

Lupins are grown primarily as a grain crop, but grazing of standing crops and stubble is also an important use. Because of their high protein content, lupins are becoming increasingly important in livestock feed and for human consumption, particularly in some of the Asian countries.

There has been a significant expansion of lupin production in recent years, particularly in Western Australia which is the major producer and exporter of lupins. Smaller quantities are also grown in New South Wales, Victoria and South Australia mainly for domestic use.

FARMSTOCKS OF CEREAL GRAINS, HAY AND SILAGE

('000 tonnes)

	Cereal grains				
At 31 March	*Barley*	*Oats*	*Wheat*	*Hay*	*Silage*
1981	518	933	860	4,764	578
1982	628	1,356	832	4,941	502
1983	506	711	970	2,983	333
1984	627	1,705	1,021	6,789	642
1985	684	1,479	910	5,872	697
1986	872	1,403	1,185	5,555	851

Tobacco

Tobacco is a summer-growing annual which requires a temperate to tropical climate, adequate soil moisture and a frost-free period of approximately five months. In Australia, all tobacco is grown under irrigation. Because of specialised requirements, production is limited to areas with suitable soils and climate. The main centres of production are the Mareeba-Dimbulah districts of north Queensland and Myrtleford in north-eastern Victoria. Other areas where tobacco is grown include Bundaberg, Beerwah and Texas (Queensland) and Yetman and Coraki (New South Wales). All tobacco grown in Australia is of the flue-cured type except for small quantities of burley tobacco produced mainly in Victoria.

TOBACCO: AREA, PRODUCTION AND OVERSEAS TRADE

			Exports (value f.o.b.)		*Imports (value)*	
Year	*Area*	*Production (dried leaf)*	*Unmanufactured*	*Manufactured*	*Unmanufactured*	*Manufactured*
	'000 ha	'000 tonnes	$'000	$'000	$'000	$'000
1980–81	7.1	14.5	2,893	8,559	44,007	31,129
1981–82	6.6	13.3	2,080	8,551	46,268	23,187
1982–83	6.7	13.4	4,835	9,667	52,916	30,420
1983–84	6.5	14.4	2,434	12,172	58,939	31,425
1984–85	5.4	12.5	110	14,545	59,789	27,692
1985–86	4.7	10.7	158	15,021	64,495	33,197

Marketing

In 1965 the Commonwealth and State Governments agreed to a stabilisation plan which provided for an annual Australian tobacco leaf marketing quota of flue-cured tobacco and a guaranteed minimum average reserve price. The plan is administered by the Australian Tobacco Board, constituted under the *Tobacco Marketing Act 1965*, and is composed of representatives of the Commonwealth Government, tobacco-growing States, growers and manufacturers.

Following a review by the Industries Assistance Commission of the tobacco industry in 1982, the Government announced a new 5-year stabilisation scheme which began in 1984. The new scheme is designed to rationalise marketing arrangements in the industry. The scheme provides that the annual tobacco leaf quotas are adjusted in line with consumption, that manufacturers' stocks are reduced to a level equivalent to 13 months' consumption by 1988, and that prices be adjusted so as to significantly reduce the gap between Australian and world prices by 1990.

Hops

Hops are grown from perennial rootstocks over deep, well-drained soils in localities sheltered from the wind. The hop-bearing vine shoots are carried upon trellises, from which they are later harvested. The green hops are kiln-dried and baled on the farm. The dried hops can be further processed at centralised processing establishments into pellets, extract or high density packs. The pelleted form constitutes the bulk of the exported hops.

The area planted to hops in Australia is about 1,300 hectares. About 65 per cent of plantings are in Tasmania (confined to the Derwent, Huon and Channel areas in the south-east, the Scottsdale-Ringarooma district in the north-east, and the Gunn Plains in the north-west of the State). The other hop producing areas are the Ovens and King Valleys in Victoria and a small area near Manjimup in Western Australia.

Australian hop production is about 2,600 tonnes, approximately 70 per cent of which is used by domestic breweries, with the remainder being exported.

Mushrooms

Statistics of mushroom growing were collected for the first time in all States for the year ended 30 June 1975.

MUSHROOMS: AREA, PRODUCTION, GROSS VALUE AND IMPORTS

		Total production			*Imports*			
				Canned or bottled	*Dried*		*Canned or bottled*	
Year	*Area*	*Quantity*	*Gross value*	*production*	*Quantity*	*Value f.o.b.*	*Quantity*	*Value f.o.b.*
	hectares	tonnes	$m	tonnes	tonnes	$'000	'000 litres	$'000
1980–81	56	8,265	18.5	3,743	93	1,140	5,864	7,120
1981–82	57	9,382	21.7	4,776	120	1,478	6,413	8,454
1982–83	65	10,266	27.1	n.p.	58	895	5,845	8,447
1983–84	69	11,036	29.4	n.p.	94	1,447	4,760	7,218
1984–85	76	12,857	36.7	n.p.	92	1,449	4,426	8,278
1985–86	70	13,026	43.8	n.p.	81	1,669	3,201	6,426

Jojoba

Jojoba is an arid zone perennial shrub native to the Sonoran Desert in U.S.A. and Mexico where it has a reputation for its ability, to survive and grow under extremely adverse conditions. About 50 per cent of seed weight consists of a high quality liquid wax suitable for a wide range of industrial applications.

Attempts are being made to establish a jojoba growing and processing industry in Australia using wild, unimproved planting material. A research backing is needed, and research in this country has investigated the environmental factors controlling flowering and fruit growth, the physiological basis of jojoba's adaptation to moisture and temperature extremes, and the sites with the best potential to support an industry.

The future development of a jojoba industry depends upon the use of improved, high-yielding plant lines and the selection of the best plantation sites. Although there are many proposed uses for the wax, future market size and price structure are unknown.

Livestock

Since 1861, annual enumerations of livestock have been made based, with few exceptions, on actual collections made through the agency of the State police or by post. Particulars concerning the numbers of each of the principal kinds of livestock in Australia at ten-yearly intervals from 1861 to 1971, and then from 1981 on by single years, are given in the following table.

LIVESTOCK, AUSTRALIA

('000)

Year	*Cattle*	*Sheep*	*Pigs*	*Year*	*Cattle*	*Sheep*	*Pigs*
1861	3,958	20,135	351	1951	15,229	115,596	1,134
1871	4,276	41,594	543	1961	17,332	152,679	1,615
1881	7,527	62,184	816	1971	24,373	177,792	2,590
1891	10,300	97,881	891	1981	25,168	134,407	2,430
1901	8,640	70,603	950	1982	24,553	137,976	2,373
1911	11,745	98,066	1,026	1983	22,478	133,237	2,490
1921	13,500	81,796	674	1984	22,161	139,242	2,527
1931	11,721	110,568	1,072	1985	22,738	149,747	2,512
1941	13,256	122,694	1,797	1986	23,436	155,561	2,553

While livestock numbers (particularly sheep) have increased substantially since 1861, marked fluctuations have taken place during the period, mainly on account of widespread droughts which have from time to time left their impressions on the pastoral history of Australia.

Australia has suffered ten major widespread droughts since the keeping of rainfall records began:

1864–1866 All States were affected except Tasmania.

1880–1886 Southern and eastern mainland States were affected.

1888 All States were hit except Western Australia.

1895–1903 This drought, one of the worst on record, halved Australia's sheep population (originally 100 million) and cut cattle numbers (12 million) by 40 per cent.

1911–1916 Wheat crops were affected in most States, sheep numbers declined by 19 million and cattle by 2 million.

1918–1920 During this period, parts of Western Australia were the only areas completely free from drought.

1939–1945 This prolonged drought affected crops and/or pastoral areas in all States. Sheep numbers fell from 125 million in 1942 to 96 million in 1945.

1965–1967 This drought, in its impact on Queensland, New South Wales and Victoria, ranked with the 1902 drought as one of the most severe on record. It resulted in a 40 per cent drop in the wheat harvest, a loss of 20 million sheep, and a decrease in farm income of $300–500 million. There was a chain reaction to other industries, with heavy losses being suffered by manufacturers of farm machinery and the New South Wales Railways. Effects of the drought were worsened by water rationing in irrigation areas.

1972 Widespread drought occurred throughout Australia.

Much of eastern Australia experienced one of the worst droughts on record in 1982 and early 1983. Widespread and soaking rains during the autumn months of 1983 greatly alleviated the situation and most areas received further good rains during 1983–84. However, 1985 saw the return of light and variable rainfall conditions. In July 1985, much of New South Wales and western Queensland had again been drought declared and regional areas of concern were notified in western Victoria, parts of South Australia and Western Australia, and much of the Northern Territory. Good rains during August 1985 relieved much of this problem.

For further details of droughts in Australia *see* the special article at the end of Chapter 16, on page 620.

The years in which the numbers of livestock attained their peaks are as follows: cattle, 1976 (33,434,000); sheep, 1970 (180,080,000); and pigs, 1973 (3,259,000).

Cattle

Cattle-raising is carried out in all States, the main object in certain districts being the production of stock suitable for slaughtering purposes and in others the raising of dairy herds. While dairy cattle are restricted mainly to southern and to coastal districts, beef cattle are more widely distributed. Cattle numbers in Australia increased slowly during the 1960s and 1970s, despite seasonal changes and heavy slaughterings, to a peak of 33.4 million in 1976. There was a continuous decline, aggravated by drought conditions, to 22.2 million in 1984. Improved seasonal conditions and higher export prices in 1984 encouraged producers to commence rebuilding herds and numbers increased to 23.4 million in 1986.

Beef cattle production is often combined with cropping, dairying and sheep. In the north (north of the 26th parallel), cattle properties and herd size are very large, pastures are generally unimproved, fodder crops are rare and beef is usually the only product. The industry is more intensive in the south because of the more favourable environment including more improved pasture.

For further details on cattle, *see Livestock and Livestock Products, Australia* (7221.0).

CATTLE NUMBERS
('000)

31 March	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*Aust. (incl. A.C.T.)*
1981	5,459	4,313	9,925	1,091	2,034	659	1,675	25,168
1982	5,429	4,121	9,782	1,013	1,942	628	1,624	24,553
1983	5,018	3,408	9,349	828	1,754	562	1,548	22,478
1984	5,036	3,487	9,154	813	1,730	542	1,390	22,161
1985	5,226	3,576	9,413	846	1,673	554	1,484	22,784
1986	5,409	3,720	9,662	914	1,690	570	1,458	23,436

CATTLE NUMBERS, BY AGE, SEX, PURPOSE
('000)

	31 March					
Classification	*1981*	*1982*	*1983*	*1984*	*1985*	*1986*
Milk cattle—						
Bulls used or intended for service	54	49	47	46	45	43
Cows, heifers and heifer calves	2,672	2,661	2,642	2,693	2,697	2,655
House cows and heifers	74	73	69	66	63	61
Total	*2,799*	*2,783*	*2,757*	*2,805*	*2,806*	*2,759*
Meat cattle—						
Bulls used or intended for service	533	527	499	498	524	554
Cows and heifers (1 year and over)	11,269	11,032	9,929	9,964	10,274	10,626
Calves under 1 year	5,135	5,023	4,644	4,455	4,897	5,010
Other cattle (1 year and over)	5,431	5,188	4,649	4,438	4,282	4,487
Total	*22,368*	*21,770*	*19,721*	*19,356*	*19,978*	*20,678*
Total, all cattle	**25,168**	**24,553**	**22,478**	**22,161**	**22,784**	**23,436**

Sheep

With the exception of a short period in the early 1860s, when the flocks in Victoria outnumbered those of New South Wales, the latter State has occupied the premier position in sheep raising. Western Australia is the second largest sheep raising State, followed by Victoria. Sheep numbers reached a peak of 180.0 million in Australia in 1970. They then declined rapidly up to March 1973 as producers turned off large numbers for slaughter and moved from wool-growing towards grain and beef production. By 1975, the numbers had again increased to 151.7 million, but in March 1978 the numbers had fallen to 131.4 million, the lowest since 1955. Improved seasonal conditions during 1978 and 1979 enabled producers to begin rebuilding their flocks. By March 1980, numbers had risen to 136.0 million. Subsequently, high levels of drought-induced slaughter led to a decline in numbers to 134.4 million by March 1981. Numbers rose to 138.0 million in March 1982 with improved seasonal conditions and the attractiveness of sheep enterprises relative to cattle contributing to the growth in numbers. Subsequently, drought conditions saw the flock reduce to 133.2 million in March 1983. The increase in flock numbers to 139.2 million in March 1984 reflects flock rebuilding by producers in response to favourable seasonal conditions beginning in the autumn of 1983, improved lambing rates, and a favourable outlook for wool and live sheep enterprises. This trend continued and, in March 1986, flock numbers reached 155.6 million.

SHEEP NUMBERS
(millions)

31 March	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*Aust. (incl. N.T., A.C.T.)*
1981	46.0	25.5	10.6	17.1	30.8	4.4	134.4
1982	48.7	25.3	12.3	16.7	30.3	4.5	138.0
1983	48.1	22.7	12.2	15.4	30.2	4.5	133.2
1984	51.0	24.6	13.0	16.4	29.5	4.6	139.2
1985	55.5	26.5	14.0	17.3	31.6	4.8	149.7
1986	58.0	26.9	14.3	17.9	33.2	5.1	155.6

SHEEP, BY AGE AND SEX
(millions)

	Sheep: 1 year and over					
31 March	*Rams*	*Breeding ewes*	*Other ewes*	*Wethers*	*Lambs and hoggets (under 1 year)*	*Total, sheep and lambs*
1981	1.8	66.9	4.8	30.1	30.8	134.4
1982	1.8	68.5	4.8	30.5	32.4	138.0
1983	1.7	65.6	5.5	28.8	31.6	133.2
1984	1.7	70.3	4.9	30.5	31.8	139.2
1985	1.8	71.0	5.4	33.3	38.3	149.7
1986	1.8	72.1	6.6	38.7	36.3	155.6

The combined value of wool and sheep slaughtered during 1985–86 is estimated at 20.5 per cent of the gross value of agricultural commodities. This proportion varies with wool and meat prices and seasonal conditions. Australia has about 20 per cent of the world's woolled sheep but produces around 25 per cent of the world's greasy wool output. In addition, in the year ended 30 June 1986 the sheep industry produced 578,000 tonnes of mutton and lamb. Exports of live sheep for slaughter during the same period totalled 6.4 million head, with Kuwait and Saudi Arabia accounting for 61 per cent of the total.

SHEEP AND LAMBS: ANALYSIS OF MOVEMENT IN NUMBERS
(millions)

Year ended 31 March	*Season*	*Number at beginning of season*	*Lambs marked*	*Live sheep exports*	*Sheep and lambs slaughtered (a)*	*Estimated deaths on farms (b)*	*Number at end of season*
1981	1980–81	136.0	43.7	6.1	31.4	7.8	134.4
1982	1981–82	134.4	44.8	6.3	28.3	6.6	138.0
1983	1982–83	138.0	45.4	6.2	30.8	13.1	133.2
1984	1983–84	133.2	44.5	6.6	25.0	6.8	139.2
1985	1984–85	139.2	51.9	6.3	27.2	7.9	149.7
1986	1985–86	149.7	49.8	6.8	31.5	5.7	155.6

(*a*) Comprises statistics from abattoirs and other major slaughtering establishments and includes estimates of animals slaughtered on farms and by country butchers; also includes animals condemned or those killed for boiling down. (*b*) Balance item.

LAMBING

Year ended 31 March	*Season*	*Number of breeding ewes at start of season*	*Mating intentions at start of season*	*Actual matings*	*Ratio of actual matings to intended matings*	*Lambs marked*	*Ratio of lambs marked to actual matings*	*Ratio of lambs marked to breeding ewes*
		million	million	million	%	million	%	%
1981	1980–81	66.5	60.3	58.1	96	43.7	75	66
1982	1981–82	66.9	61.9	60.5	98	44.8	74	67
1983	1982–83	68.5	64.6	60.9	94	45.4	74	66
1984	1983–84	65.6	58.9	58.5	99	44.5	76	68
1985	1984–85	70.3	65.9	63.5	96	51.9	82	74
1986	1985–86	71.0	65.3	62.8	96	49.8	79	70

Pigs

Over the past 30 years there have been significant changes to the structure of the Australian pig industry. Initially, pigs were raised as part of a dairying operation where there were abundant supplies of liquid skim milk. Today, however, with introduction of factory separation of milk and cream, coupled with the low grain prices of the 1960s, pig raising has become more and more associated with grain production.

In addition there has been a major move away from the so called extensive method of pig raising to the intensive conditions that apply today. This has meant an increase in the capital investment in the industry and a greater degree of specialisation in pig raising. The average pig production unit today would be based on approximately 300 sows with feeds being almost exclusively grain based. While the number of sows in Australia has remained fairly constant the number of pig farmers has decreased.

PIG NUMBERS
('000)

31 March	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	Aust. (incl. N.T., A.C.T.)
1981	787	400	502	394	289	54	2,430
1982	766	406	513	374	263	47	2,373
1983	794	387	551	405	300	51	2,490
1984	799	404	556	417	300	48	2,527
1985	814	410	563	402	274	47	2,512
1986	798	432	585	414	278	45	2,553

Poultry

The commercial poultry industry comprising hatcheryworkers, egg producers and broiler growers is highly specialised, although a proportion of production comes from 'backyard' egg producers, roughly estimated at from 20 to 25 per cent of the total. There are also separate research schemes funded jointly by industry and government for the egg and meat chicken industries but close liaison exists. Both sectors are good examples of specialised, large scale, capital-intensive production.

POULTRY NUMBERS (*a*)
('000)

	Chickens			Other poultry			
31 March	Hens and pullets for egg production	Meat strain chickens (broilers)	Total chickens(b)	Ducks	Turkeys	Other poultry	Total all poultry
1981	15,187	29,077	46,386	228	750	175	47,539
1982	14,930	27,478	44,761	317	713	213	46,004
1983	15,532	30,296	48,389	294	467	243	49,393
1984	14,075	31,318	47,529	370	535	239	48,673
1985	13,497	33,761	50,109	219	653	293	51,273
1986	13,752	35,619	51,807	288	580	378	53,053

(*a*) Data are for numbers of poultry on agricultural establishments as reported in the annual Agricultural Census. (*b*) Includes breeding stock and data not available for separate publication.

For further details on pigs and poultry *see* the publication *Livestock and Livestock Products, Australia* (7221.0).

Meat production, slaughterings and other disposals

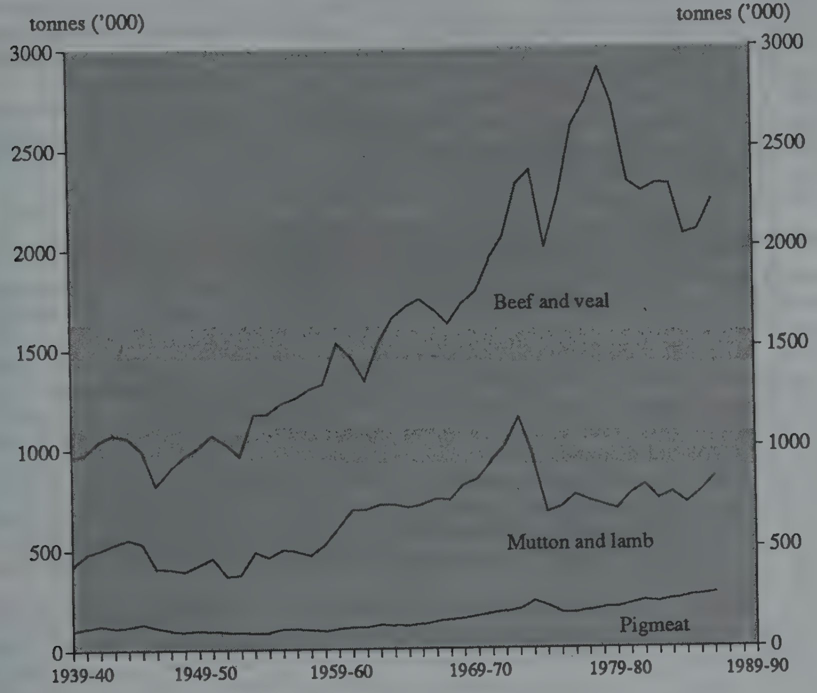
The ABS collects details of slaughterings and meat production from abattoirs, commercial poultry and other slaughtering establishments and includes estimates of animals slaughtered on farms and by country butchers. The data relate only to slaughterings for human consumption and do not include animals condemned or those killed for boiling down.

PRODUCTION OF MEAT BY TYPE (*a*)
('000 tonnes)

	Carcass weight						Dressed weight(b)	
Year	Beef	Veal	Mutton	Lamb	Pig meat	Total meat	Chickens	Total all poultry(c)
1980–81	1,418	50	299	279	233	2,278	276	303
1981–82	1,526	50	234	277	228	2,316	259	286
1982–83	1,482	61	250	280	239	2,313	283	314
1983–84	1,303	42	169	296	253	2,064	272	298
1984–85	1,271	39	215	301	260	2,086	315	345
1985–86	1,344	41	258	320	269	2,232	334	367

(*a*) Excludes offal. (*b*) Dressed weight of whole birds, pieces and giblets. (*c*) Includes other fowls, turkeys, ducks and drakes.

PRODUCTION OF MEAT, AUSTRALIA



NUMBERS OF LIVESTOCK AND POULTRY SLAUGHTERED FOR HUMAN CONSUMPTION
(million head)

Year	*Cattle*	*Calves*	*Sheep*	*Lambs*	*Pigs*	*Chickens (a)*	*Other fowls (b) and turkeys*	*Ducks and drakes*
1980–81	7.0	1.5	15.2	16.6	4.2	221.7	11.2	1.7
1981–82	7.2	1.5	11.9	16.3	4.1	205.9	10.0	2.0
1982–83	7.4	1.7	13.1	16.9	4.2	226.2	10.9	1.9
1983–84	6.0	1.3	8.4	17.1	4.4	216.2	10.2	1.7
1984–85	5.8	1.2	10.5	17.5	4.5	244.2	10.7	2.1
1985–86	6.2	1.2	12.9	19.1	4.5	258.4	11.8	2.3

(*a*) Comprises broilers, fryers and roasters. (*b*) Comprises hens, roosters, etc.

Mutton and lamb

Production of sheepmeats in Australia is closely associated with the wool industry. Sheep grazing often occurs on mixed farms in conjunction with beef and/or grain enterprises and in some areas producers specialise in lamb production. The supply of sheepmeat depends greatly on seasonal conditions, decisions to build up or reduce flock numbers, expectations of wool prices, live sheep exports and the pattern of domestic consumption of meat.

There was a movement out of sheep raising in Australia early in the 1970s, principally as a result of low wool prices, and many producers diversified into cattle and grains. Flock numbers declined from a peak of 180.0 million in 1970 to a low of 131.0 million by 1978. After 1978, wool and sheepmeat prices improved and the trade in live sheep for slaughter overseas continued to expand. As a result, the national flock size increased slightly to 136.0 million by March 1980. Since March 1980, flock numbers have fluctuated as a result of climatic and market conditions peaking at 138.0 million in March 1982, before dropping to 133.2 million in March 1983. Total Australian sheep flock in March 1986 is 155.6 million head.

Sheepmeat production declined rapidly from the high levels of the early 1970s, which were associated with flock reduction, to annual levels of between 400,000 and 600,000 tonnes from 1973–74. Lamb production has remained close to 280,000 tonnes per year, while mutton production has varied between 230,000 and 300,000 tonnes in recent years until 1983–84, when it declined to 169,000 tonnes. Production increased to 289,000 tonnes in 1986–87.

A high proportion of lamb is consumed in Australia with per capita consumption remaining steady at about 14–16 kilograms per year. A high proportion of mutton produced is exported. Australia is the world's largest exporter of mutton, with Japan and the Middle East being the main markets.

Live sheep and lamb exports for slaughter during 1986–87 totalled 7.7 million head.

Beef and veal

The cattle industry is very dependent on international trade in beef and is subject to great fluctuations. Over half of Australia's beef and veal production is exported, with the U.S.A. and Japan the main outlets.

Beef and veal production in Australia rose markedly in the 1970s, reaching peak levels of over 2.0 million tonnes in 1977–78 and 1978–79, but declining to 1.3 million tonnes in 1984–85. The increase in production followed the rapid expansion of the beef herd that had occurred during the late 1960s and early 1970s mainly in response to relatively profitable beef prices and increased demand from overseas markets.

In the mid-1970s, poor economic conditions and heavy domestic supplies of beef in major importing countries led them to impose severe restrictions on their imports. With reduced international demand and heavy supplies in Australia, saleyard prices fell greatly and remained low for about four years. The depressed conditions were accompanied by a severe reduction in the national herd.

Improved seasonal conditions during 1983, accompanied by strengthening overseas demand, resulted in a move towards herd rebuilding. However, the high level of drought-induced slaughterings during 1982 had reduced the breeding herd base implying very slow herd expansion until 1986. Higher slaughtering in 1986–87 indicate that there has been a break in the rebuilding due to favourable prices. Current projections by the Australian Meat and Livestock Corporation (AMLC) indicate that cattle numbers will slowly increase throughout the 1980s. The lower levels of slaughter accompanying the rebuilding process suggest a decline in the levels of beef and veal production in coming years. Export demand for beef during 1986–87 improved, in part due to the continuing depreciation of the Australian dollar. Saleyard prices of cattle have reached record levels due to strong competitive demand between graziers and cattle fatteners for a limited supply of cattle.

Pigmeat

Significant changes have taken place in the pig producing industry in recent years. Capital investment and corporate takeovers have seen the emergence of a few large companies producing 30 per cent of all pigs sold in Australia. These moves on top of the trend to more intensive and efficient production techniques have seen pigmeat production rise steadily since 1982 to reach 269,000 tonnes in 1985–86. In addition, there has been an increase in the slaughter weights of pigs reflecting the demands of the fresh pork trade.

It is believed that about 60 per cent of production is processed into bacon, hams and smallgoods, with the rest sold as fresh pork. Less than 2 per cent of the industry's output is exported. The increasing production of pigmeat therefore reflects a steady increase in per capita domestic consumption over the past three years.

In recent years a small but useful market for the meat of feral pigs has been established in Europe.

Prices paid for pigs at auction have varied quite markedly in recent years. However, producers have benefitted from lower prices for feed grains which have prevailed over the past few years.

Poultry meat

The poultry meat industry developed rapidly in the 1970s with both output and consumption rising steeply, although in recent years production has exceeded demand and excess production capacity in the industry continues. Genetic and technical improvements and the organisation of the industry into large-scale enterprises have raised efficiency and helped to reduce production costs relative to other meats. The price competitiveness of chicken meat compared with other meats, especially beef, continues to improve, consolidating the position of poultry meat as the second most important meat after beef in Australian diets.

EXPORTS OF FRESH, CHILLED OR FROZEN MEAT

Year	*Beef*	*Veal*	*Mutton*	*Lamb*	*Pork*	*Poultry*
QUANTITY (*a*) ('000 tonnes)						
1980–81	753.7	13.6	241.5	39.4	2.4	7.7
1981–82	775.2	8.5	154.6	32.1	1.5	4.1
1982–83	817.2	10.1	201.1	36.9	1.8	2.2
1983–84	657.8	4.6	90.8	33.2	2.0	1.2
1984–85	604.2	7.0	97.9	29.1	3.3	1.2
1985–86	704.3	7.7	141.6	51.9	2.8	1.7
VALUE f.o.b. ($ million)						
1980–81	1,086.4	22.9	248.2	62.3	5.7	12.1
1981–82	1,009.8	14.4	155.3	50.7	3.1	7.3
1982–83	1,164.8	17.9	167.1	61.1	5.4	4.4
1983–84	1,109.6	10.6	84.0	53.4	6.2	2.5
1984–85	1,062.2	16.2	91.7	50.1	11.9	2.5
1985–86	1,301.5	15.7	123.9	87.1	9.9	3.6

(*a*) Quantity data on beef, veal, mutton and lamb exports are shown in carcass weight equivalents.

Exports of live animals

For details of the regulation governing the export (and import) of live animals *see Year Book* No. 61.

EXPORTS OF LIVE ANIMALS

	Livestock			*Poultry*		
	Sheep and lambs	*Total(a)*		*Day old chicks*	*Total*	
Year		*Number*	*Value f.o.b.*		*Number*	*Value f.o.b.*
	—'000—		$'000	—'000—		$'000
1980–81	5,740	5,842	208,483	862	974	832
1981–82	6,009	6,112	214,886	809	935	720
1982–83	6,992	7,086	212,277	370	415	565
1983–84	6,349	6,434	228,481	477	568	693
1984–85	6,256	6,316	216,707	234	369	503
1985–86	6,368	6,537	217,716	289	333	700

(*a*) Also includes cattle, calves, buffaloes and pigs.

PRODUCTION AND EXPORT OF BACON, HAM AND CANNED MEAT

	Production			*Exports*			
	Bacon and ham(a)		*Canned meat(b)*	*Bacon and ham(c)*		*Canned meat(d)*	
Year	*Bone-in*	*Bone-out*		*Quantity*	*Value*	*Quantity*	*Value*
	tonnes	tonnes	tonnes	tonnes	$'000 f.o.b.	tonnes	$'000 f.o.b.
1980–81	18,878	55,564	36,431	528	1,991	17,400	42,139
1981–82	18,112	57,818	34,590	523	1,959	19,651	50,461
1982–83	17,051	55,634	n.a.	515	2,292	21,587	58,704
1983–84	18,355	59,796	n.a.	592	2,316	18,571	57,658
1984–85	17,638	61,136	n.a.	316	1,323	12,979	37,984
1985–86	18,077	60,039	n.a.	173	825	14,878	41,952

(*a*) Production of bacon and ham 'on the bone' is shown in terms of 'bone-in' weight, while production of boneless bacon and ham is shown in terms of 'bone-out' weight. Production of canned bacon and ham, which is reported in terms of 'stated net weight of packs', is included in the 'bone-out' category. (*b*) Canned weight. Includes bacon, ham and meat and vegetables, but excludes rabbit, poultry and baby foods. (*c*) Cured carcass weight of smoked or cooked bacon and ham. Includes 'stated net weight of packs' of canned bacon and ham. (*d*) Canned weight; excludes canned bacon and ham.

GROSS VALUE OF LIVESTOCK SLAUGHTERINGS AND OTHER DISPOSALS*(a)*
($ million)

Year	*Cattle and calves*	*Sheep and lambs*	*Pigs*	*Poultry*	*Total*
1980–81	2,056.5	718.9	337.5	361.4	3,474.3
1981–82	1,890.1	646.7	396.1	362.7	3,295.6
1982–83	2,076.2	548.0	414.9	412.7	3,451.8
1983–84	2,118.0	585.0	375.5	430.2	3,508.6
1984–85	2,253.2	576.1	438.1	512.6	3,783.3
1985–86	2,367.3	518.0	438.3	559.1	3,882.8

(a) Includes adjustment for net exports of live animals.

Consumption

The methodology for calculating meat consumption has been revised for the years 1975–76 to 1983–84 and is now shown purely in carcass weight equivalent terms. Canned meat as such is not available. Carcass weight is defined as ex abattoir (i.e. bone in). Owing to diverse cutting practices by butchers and the difficulty in clearly defining 'retail weight of meat' it is considered impractical to derive a factor for the purpose of expressing estimated meat consumption in terms of retail weight. (Estimates of retail weight as a percentage of carcass weight range from 70 per cent for beef, 80 to 85 per cent for lamb and 80 per cent for pork.)

APPARENT CONSUMPTION OF MEAT AND MEAT PRODUCTS AS HUMAN FOOD

Year	*Beef and veal*	*Mutton*	*Lamb*	*Pigmeat (a)*	*Offal*	*Total meat*	*Poultry meat*
TOTAL ('000 tonnes)							
1980–81	695	72	234	231	62	1,295	301
1981–82	750	53	245	227	66	1,341	294
1982–83	701	68	247	233	67	1,316	311
1983–84	654	81	261	254	53	1,303	309
1984–85	660	104	267	256	44	1,331	341
1985–86	656	113	268	269	43	1,349	365
PER CAPITA PER YEAR (kg)							
1980–81	47.0	4.9	15.8	15.6	4.2	87.5	20.3
1981–82	49.8	3.5	16.3	15.1	4.4	89.1	19.6
1982–83	45.9	4.5	16.2	15.3	4.4	86.1	20.3
1983–84	42.3	5.2	16.9	16.4	3.4	84.3	20.0
1984–85	42.1	6.6	17.0	16.4	2.8	85.0	21.8
1985–86	41.4	7.1	16.9	17.0	2.7	85.0	23.0

(a) Includes pigmeat products such as bacon and ham.

NOTE: Beef, veal, mutton, lamb, pigmeat and offal are expressed in terms of carcass weight, and poultry meat in dressed weight.

For further details on meat production and slaughtering *see* the following publications: *Livestock and Livestock Products, Australia* (7221.0), *Value of Agricultural Commodities Produced, Australia* (7503.0) and *Apparent Consumption of Foodstuffs and Nutrients, Australia* (4306.0).

Australia Meat and Livestock Corporation

Legislation was enacted to establish the Australian Meat and Livestock Corporation (AMLC) from 1 December 1977. The Corporation, which regulates and promotes the export of both meat and livestock and the promotion of domestic consumption, replaced the Australian Meat Board.

In mid-1984 the Australian Government introduced measures to restructure the administration of the Australian livestock and meat industry. Legislation enacted at the time, or foreshadowed, had three primary components:

- a restructured AMLC;
- establishment of the Australian Meat & Livestock Industry Policy Council (AMLIPC);
- the foreshadowed replacement of the Australian Meat Research Committee (AMRC)

with an incorporated body called the Australian Meat and Livestock Research and Development Corporation (AMLRDC).

The AMLC has the power to trade in meat and livestock in a manner which accords with adopted policy and with normal commercial practice. Its power is also extended to engaging in sole trading or to permitting restricted trading by a specified holder or holders of meat or livestock licences. The exercise of this sole or restricted trading power is limited to circumstances where: a monopoly buying power is, in the AMLC's opinion, distorting normal market forces; such action is necessary or desirable to ensure that producers receive a fair return for the meat or livestock exported to that market; the exercise of sole trading powers would be beneficial for the development or further development of that market; the exercise of sole trading powers would be in the best commercial interests of the industry.

In order to foster consultation, the AMLC may, for the purposes of considering any matter relating to the performance of its functions, make arrangements for consulting persons and bodies representative of different sectors of the industry.

The AMLC's main functions are to:

- improve the production of meat and livestock in Australia;
- encourage and promote the consumption and sale of Australian meat, and the sale of Australian livestock, both in Australia and overseas;
- encourage, assist, promote and control the export of meat and livestock from Australia.

Exporters of meat and livestock are licenced by the AMLC and have to comply with its requirements in relation to export trading. The AMLC assists exporters in overseas market development and conducts meat promotion activities in Australia and abroad. It has authority also, to perform a wide range of other functions aimed at improving the production of meat and livestock for the general benefit of the meat and livestock industry.

Two bodies have been established within AMLC to undertake major programs for the meat and livestock industry. These are the Authority for Uniform Specification of Meat and Livestock (AUSMEAT), which is developing and implementing a meat and livestock description language, and Computer Aided Livestock Marketing (CALM) which is conducting livestock sales by computer.

Australian Meat and Livestock Industry Policy Council

The legislation referred to above established a new statutory body, the AMLIPC, to relieve the AMLC of responsibility for the examination of all broad industry policy issues. It is intended that AMLIPC:

- facilitate the participation of industry in the development and formulation of industry policies;
- provide a forum of consensus, building between different sectoral interests within the industry;
- provide opportunities, through AMLIPC Working Groups, for all interested parties to work together on the factual examination of industry problems, and to present practical proposals to government for their solution.

Wool

The Australian Sheep Flock contains nearly 20 per cent of the world's sheep, and produces over 28 per cent of the total annual production of wool. Approximately 75 per cent of the Australian Flock are of a single breed, the Merino, raised primarily for its heavy fleeces of fine quality wool.

Wool production

Wool as shorn from the sheep ('greasy wool') contains an appreciable amount of grease, dirt, vegetable matter and other extraneous material other than the clean wool fibre. The exact quantities of these impurities in the fleece vary between countries, differing climatic and pastoral conditions, with seasonal fluctuations and with the breed and condition of the sheep. It is, however, the clean wool fibre that is ultimately consumed by the textile industry and the term 'clean yield' is used to express the net wool fibre content present in greasy wool.

Since the 1946–47 season, the average clean yield of Australian wool has been assessed annually. In the early years, the average clean yield was assessed on the basis of a small number of tests and subjective appraisal. However, in recent years the Australian Wool Corporation has calculated the clip average yield on the basis of laboratory tests of yield applied to nearly all wool offered for sale at auction in Australia. It was 64.31 per cent in 1985–86.

Wool scoured and carbonised in Australia before export, however, has a somewhat lower clean yield than the whole clip, because much of the greasy wool treated locally for export in this form is dirty, low-grade wool. The quantity of scoured and carbonised wool exported during 1985–86 was about 16 per cent of total raw wool exports in greasy terms. For the clean yield of Australian scoured wools exported, a standard factor of 93 per cent has been adopted.

The following table shows details of total wool (i.e. shorn, dead, fellmongered and exported on skins) as well as the numbers of animals shorn, the average fleece weight and the gross value of the wool.

SHEARING, WOOL PRODUCTION AND VALUE

			Wool production			
					Total wool	
Year	*Sheep and lambs shorn*	*Average fleece weight*	*Shorn wool*	*Other wool(a)*	*Quantity*	*Gross value (b)*
	million	kg	'000 tonnes	'000 tonnes	'000 tonnes	$m
1980–81	150.0	4.25	637.9	62.3	700.1	1,670
1981–82	155.2	4.26	661.0	56.2	717.2	1,789
1982–83	149.1	4.30	641.5	60.2	701.7	1,761
1983–84	152.6	4.40	671.2	56.4	727.6	2,016
1984–85	168.2	4.48	752.7	61.6	814.3	2,434
1985–86	173.8	4.39	762.1	67.4	829.5	2,707

(*a*) Comprises dead and fellmongered wool, and wool exported on skins. (*b*) Gross value is based, for shorn wool, upon the average price realised for greasy wool sold at auction and, for skin wools, on prices recorded by fellmongers and skin exporters.

The wool market

The primary raw wool market in Australia is at public auctions where brokers receive wool into store and then acting on the growers' behalf arrange sampling for valuation and for laboratory measurement of the main, variable physical characteristics and then offer the wool for sale at a rostered auction. Some 80 per cent or more of the clip is normally marketed this way. The remainder is sold privately at transaction prices agreed between the grower and a buyer.

The Australian Wool Corporation, on behalf of all growers, operates a minimum price support scheme at public auction sales.

Wool receivals

TAXABLE WOOL RECEIVALS

	Receivals				
Year	*Brokers (NCWSB)*	*Dealers(a)*	*Brokers and dealers*	*Dealers as per cent of total receivals*	*Shorn wool production(b)*
	—'000 tonnes—			per cent	'000 tonnes
1980–81	523.8	134.2	658.0	20.4	637.9
1981–82	539.0	141.4	680.4	20.8	661.0
1982–83	509.6	141.2	650.8	21.7	641.5
1983–84	535.5	152.9	688.4	22.2	671.2
1984–85	588.3	164.0	752.2	21.8	752.7
1985–86	599.2	167.6	766.7	21.9	762.1

(*a*) Includes brokers who are not members of the National Council of Wool Selling Brokers of Australia (NCWSB). (*b*) Obtained from the annual Agricultural Census.

Under the terms of the Wool Tax Acts, all growers pay a tax on the gross value of shorn wool sales, to provide financial backing for wool promotion, research and the operation of a statutory Reserve Price Scheme. The ABS collects details of the total amounts of taxable wool received by wool selling brokers and dealers each year. These figures exclude wool received by brokers on which tax had already been paid by other dealers (private buyers) or brokers.

Wool marketing arrangements

The Australian Wool Corporation is a Commonwealth statutory authority, established at the request of the nation's woolgrowers to undertake a number of functions on their behalf, principally to stimulate the demand for Australian wool. Most important of these functions is a Reserve Price Scheme in the raw wool market, and comprehensive global wool promotion programs.

The Reserve Price Scheme was introduced to the market in 1970 and seeks to provide a measure of wool price stability, in Australian dollar terms, to the benefit of the industry.

At the commencement of each season a Minimum Price for each wool type is established, and published, to apply for the entirety of that season (financial year). Any wool which fails to attract bids equal to or higher than this minimum is purchased by the Corporation at that price and held by the Corporation until demand improves. As well, when the market is trading above floor price levels, the Corporation may intervene in the market with the aim of providing market stability. This may be needed, for instance, when there is uncertainty about exchange rates or when the market enters a cycle of volatile price change.

Finance for the operation of the Reserve Price Scheme is provided by growers, through a compulsory Wool Tax. The Australian Wool Corporation has a number of other responsibilities which include supervision of the industry's comprehensive research programs, establishing, monitoring and when necessary enforcing industry agreed clip preparation standards, shearer training and encouraging efficiency within the sphere of wool handling and transport. It also operates extensive commercial storage facilities on the industry's behalf.

Wool testing

The Australian Wool Testing Authority came into existence in 1957 but its role became more prominent with the introduction, in 1971, of wool valuation techniques relying on objective specification of wool's main physical characteristics. From the first sales of wool in this manner in the early 1970s, this technique has achieved universal acceptance and now 99 per cent of all wool sold at auction is accompanied by certified measurements for yield, (i.e. the amount of clean wool fibre), average fibre diameter and the percentage and type of vegetable fault.

During the 1986–87 season, commercial testing commenced for the additional characteristics of staple length and strength. Adoption of these new measurements will be a necessary prelude to further marketing innovations including the possible sale of wool solely on the basis of measurement and description.

At the direction of the Commonwealth Government, the Authority, which had operated as a division of the Corporation, was transferred to the private sector effective from the beginning of July 1982. The new company is known as AWTA Ltd.

Wool promotion

Since 97 per cent of the Australian wool clip is exported, the other major arm of wool marketing is the demand stimulating activities carried out in manufacturing and consumer markets around the world. These programs, which commenced in 1937, were significantly scaled up in the 1960s in response to the challenge posed by synthetic fibres. In more recent times, these programs have again been increased in an effort to ensure wool's future as a preferred textile fibre in the world's major consumer markets. Growers have financed wool promotion since its inception, and currently do so at the rate of 4 per cent of their gross wool sales revenue. This is boosted by a Commonwealth Government contribution equal to 1.2 per cent of gross wool sales revenue, and in 1986–87 these contributions totalled $147 million. The majority of these funds are remitted to the International Wool Secretariat which operates actively in more than 50 countries around the world.

Wool research

Australian woolgrowers have financed industry research programs since 1937. In recent times this was co-ordinated through the Wool Research Trust Fund to which both the woolgrowers and the Commonwealth Government contributed. The Fund was administered by the Commonwealth Department of Primary Industries and Energy.

From 1 July 1986, the task of determining industry research priorities and allocating funds was transfered to a new body, the Wool Research & Development Council which was constituted as a committee of the Australian Wool Corporation.

Major recipients of wool industry research funds include the Commonwealth Scientific and Industrial Research Organisation (CSIRO)—especially in the fields of wool textile research; the Australian Bureau of Agricultural and Resource Economics; universities and States' departments of agriculture primary industry.

Wool income

Fluctuations in wool prices have a marked effect on agricultural and national income. In 1945–46 the gross value of wool production was $117.2 million, representing 17.4 per cent of the gross value of all agricultural commodities produced, while in 1950–51, when prices reached a peak during the Korean War, wool was valued at $1,303.8 million, or 55.6 per cent of total agricultural industries. More recent figures for the contribution of wool income to total agricultural production and national exports reflect the growth in other commodities over the intervening years, rather than a decline in the fortunes of the wool industry.

WOOL INCOME
(per cent)

Year	*Value of wool as a per cent of total agriculture*	*Value of wool exports as a per cent of total Australian exports*
1980–81	14.4	10.2
1981–82	14.1	10.2
1982–83	15.0	8.5
1983–84	13.1	8.7
1984–85	15.8	8.7
1985–86	17.6	7.3

The gradual strengthening of wool prices since the mid-1970s has seen wool's contribution to total national export revenue increase steadily and in the years since 1983–84 has almost doubled to almost $4,000 million in 1986–87. This makes wool Australia's largest primary industry export earner and second only to coal on the list of national export industries.

Stocks

Stocks shown below of raw and semi-processed wool were held by wool processors, scourers, fellmongers, brokers, dealers and the Australian Wool Corporation. They exclude wool on skins since this wool is not recorded as production until fellmongered in Australia or exported on skins.

WOOL STOCKS

('000 tonnes)

At 30 June	*Stocks of—* Raw Wool Greasy	Raw Wool Clean	Semi-processed wool Greasy	Semi-processed wool Clean	Total wool Greasy	Total wool Clean
1981	155.1	96.0	10.8	6.8	165.9	102.8
1982	210.7	131.6	8.5	5.3	219.2	137.0
1983	305.4	189.5	8.2	5.1	313.6	194.6
1984	368.4	232.1	9.6	6.1	378.0	238.2
1985	332.8	212.5	9.1	5.9	341.9	218.3
1986	299.0	190.9	8.5	5.5	307.5	196.3

Wool processing

Approximately 85 per cent of all wool passing through the Australian auction system comprises combing fleece and oddment types which are ultimately processed on the worsted system. The remaining 15 per cent, being the shorter or carding wools such as locks, crutchings, and lambs wool, is directed to the woollen system. This latter group is boosted some 5–10 per cent by noils combed out during worsted processing.

At present about two-thirds of total carding types produced are processed in Australia, though recent expansion in carbonising capacity in Taiwan and Japan has introduced a new element to this section of the market.

During the 1970s there was a trend to increased early stage processing of Australian wool before export. Recently, however, early stage processing has stabilised at around 18 per cent of wool production. Over 95 per cent of total Australian wool production ultimately enters international trade.

The main scope for expanded domestic processing remains with worsted types for export in scoured or combed top form. Japanese processors initiated the export of scoured worsted types from Australia, and Japan became Australia's major export market for scoured wool in 1973–74.

Before 1975 the wool processing industry was largely centralised in cities close to major ports. Since then, however, a general trend towards decentralised, inland locations has occurred.

Wool consumption

Two series of calculations on Australian wool consumption are shown below.

- Consumption of raw wool, which measures consumption in terms of scoured wool used by mills.
- Consumption of processed wool, which is calculated from the usage of woollen and worsted yarn.

Raw wool comprises greasy, slipe, scoured and carbonised wool. This series has been included for comparison purposes with other countries.

CONSUMPTION OF RAW AND PROCESSED WOOL

('000 tonnes)

Year	Consumption of raw wool Greasy	Consumption of raw wool Clean	*Consumption of processed wool* Worsted yarn used(a) Greasy	Worsted yarn used(a) Clean	Woollen yarn used(b) Greasy	Woollen yarn used(b) Clean	Total Greasy	Total Clean
1980–81	51.9	31.0	9.4	5.5	14.5	8.9	25.0	14.9
1981–82	55.5	33.1	8.6	5.1	15.3	9.5	25.1	15.1
1982–83	54.7	32.7	9.8	5.8	13.1	8.2	24.1	14.5
1983–84	54.4	32.4	9.8	5.7	14.4	8.9	25.5	15.2
1984–85	59.3	35.4	10.7	6.3	17.0	10.6	28.9	17.4
1985–86	62.5	37.3	10.5	6.1	18.3	11.4	29.9	18.1

(*a*) Wool content of yarns containing a mixture of wool and other fibres. (*b*) Comprises pure and mixed woollen yarn.

The second series is considered to be a more satisfactory measure of Australian wool consumption, principally because allowance is made for significant quantities of wool tops exported. However, both series relate to consumption of wool by the wool textile industry, and should not be used as measures of consumption of wool at retail level. It has not been possible to estimate wool consumption at retail level because of the impractibility of obtaining reliable data concerning the wool content of the multiplicity of woollen and worsted piece-goods.

Exports of wool

From its earliest days the Australian wool industry has been export oriented, and today approximately 95 per cent of total annual production of wool is exported.

The great bulk of this leaves the country in its natural 'greasy' state, but increasing quantities are being exported in part processed forms (i.e. scoured, carbonised, top and noil) and as wool on skins.

EXPORTS OF WOOL

	Selected exports ('000 tonnes: greasy basis)			*Total exports*	
Year	*Greasy and slipe*	*Scoured and carbonised*	*Exported on skins*	*Greasy basis (a)*	*Value f.o.b.*
				'000 tonnes	$m
1980–81	531.7	101.9	57.0	714.8	1,931
1981–82	497.6	93.0	50.6	667.9	1,913
1982–83	487.7	82.0	54.2	653.6	1,881
1983–84	497.7	95.7	50.7	669.8	2,049
1984–85	554.9	108.5	55.4	746.8	2,548
1985–86	607.9	130.4	61.2	830.5	3,098

(*a*) Includes processed wool.

For further details on sheep shorn, wool production and overseas trade *see* the following publications: *Livestock and Livestock Products, Australia* (7221.0), *Sheep Numbers, Shearing and Wool Production Forecast, Australia* (7211.0), *Shearing and Wool Production Forecast, Australia (Preliminary)* (7210.0), *Livestock Products, Australia* (7215.0), *Foreign Trade, Australia* (5409.0, 5410.0), *Production Bulletin No. 4: Australia* (8360.0) and *Value of Agricultural Commodities Produced, Australia* (7503.0).

Dairying

Dairying in Australia has experienced quite significant changes in recent decades. In response to changed demand patterns and consumer preference, both in Australia and overseas, there have been dramatic changes in cow numbers, farm productivity, product mix, export levels and major export destinations.

Although dairying occurs in all States, Victoria, Tasmania and New South Wales combined account for 80 per cent of total milk production. In recent years there has been structural adjustment in some States to match production with domestic market demand—particularly liquid milk demand. With the exception of some inland irrigation areas, e.g. the Goulburn/Murray Valley and the M.I.A., most dairying is centred along the coastal belt. Some feed lot dairies have been established in Australia.

Production

Wholemilk production has been around 6,000 million litres in more recent years with Victoria representing approximately 60 per cent. Although total production has stabilised, this has been associated with a fall in both cow numbers and the number of registered dairy farms. In 1985–86 there were some 18,500 registered dairy farms with 1,776,000 cows in production. This compares with 1982 figures showing some 20,300 farms and 1,812,000 cows.

The factors behind the yield gains of about 4 per cent per annum since 1982 include improved feeding programs (pasture and supplementary), genetic/breeding gains and generally enhanced farm management practices. Economy of operation gains have been possible as average farm and herd size has increased. This has enabled more economic application of new technology.

There has also been change within the processing sector, reflecting adjustments to relative prices. Persistent world stockpiles of butter have depressed export prices over recent years. As a result there has been a marked swing away from butter production to cheese and wholemilk powder production. Associated with falling butter production has been a fall in skim milk powder production. New technology, e.g. short method cheese production and ultra filtration, is enabling the processing sector to improve its relative competitiveness. Recent amalgamations within the processing sector should enable further competitive gains.

Domestic market

The consumption of dairy products in Australia has undergone change in recent years in both the volume and composition of dairy product consumption. These changes generally reflect changes within the Australian population as Australia becomes more culturally diverse. Other factors influencing dairy food consumption include changed consumer preference, e.g. more diet/health conscious, and changed relative prices (butter with respect to margarine). Liquid milk sales account for around 27 per cent of total milk production and compete heavily against other non-alcoholic beverages, e.g. fruit juices. Changes in manufactured dairy produce consumption have been more dramatic than for liquid milk. Recent product developments such as spreadable butter and butter/vegetable oil blends have been commercialised with reasonable success.

Since 1960 annual per capita cheese consumption has risen by an average of 7.9 per cent with current levels at around 8.4 kilograms. The area of greatest growth has been in the specialty type cheeses while per capita consumption of traditional cheddar type cheeses has stabilised at around 4.5 kilograms per annum. The cheeses to have experienced quite large increases include Camembert, Mozzarella and Parmesan.

Recent figures indicate a slight trend towards locally produced cheese at the expense of imported product—particularly from the E.E.C. This trend towards local product reflects international currency movements and a more responsive local processing sector. Smaller, sometimes on-farm, cheese plants have been recently established in response to this consumer trend towards the specialty type cheeses.

MILK CATTLE NUMBERS

('000)

		Cows and heifers used or intended for production of milk or cream for sale			
			Heifers		
31 March	*Bulls used or intended for service*	*Cows (in milk and dry)*	*1 year and over*	*Under 1 year*	*House cows and heifers (a)*
1981	54	1,819	460	393	74
1982	49	1,810	465	387	73
1983	47	1,792	460	390	69
1984	46	1,809	483	401	66
1985	45	1,809	475	413	63
1986	43	1,770	488	397	61

(*a*) One year and over, kept for the establishment's own milk supply.

International marketing

During 1986–87, Australia exported dairy product to the value of $466m (f.o.b.). In value terms, the main exports were cheese and milk powders, especially skim and whole milk. Given changes in the international marketing environment—especially the E.E.C.—the direction of Australian dairy product exports has changed significantly over recent years.

World market price minima for dairy products are established under the General Agreement on Tariffs and Trade (GATT). The minima are determined after consultation with relevant signatory nations. However, given over-supply of some dairy products there has been an incentive to sell product on the world market at below GATT minimum prices.

Government assistance

New institutional market arrangements in the Australian dairy industry were introduced on 1 July 1986. This scheme was developed after much industry consultation and replaced an equalisation scheme which aimed to protect the industry from unexpected and sharp falls in market prices. Central to the former scheme was that returns on export markets were pooled and manufacturers received an equalised return.

Under the current scheme there is to be no equalising of returns and, as such, individual manufacturer performance may be reflected in farm gate returns. The general thrust of the new arrangements are to further expose the industry to market forces, both locally and overseas. An integral part of the current arrangements is the operation of the Market Support Payments and the Supplementary Support Payment funds. These funds aim to support export market returns.

The Market Support Payments Fund is financed via an all milk levy which is determined by government following recommendation of the Australian Dairy Corporation. The all milk levy for 1986–87 was set at 35c/kg milkfat, current legislation prevents the levy exceeding 45c/kg milkfat.

The Supplementary Support Payment Scheme was established to cover the transition from the former underwriting/equalisation scheme to the current arrangements. Product levies are payable on all domestic sales of butter and certain cheese varieties. Assistance to industry is also offered via the Rural Adjustment Scheme which provides financial assistance for such things as farm build-up, farm-improvement and household support. Government funding of dairy research is provided on a dollar for dollar matching basis with industry funded contributions. Producers at present pay a 2.5 cents/kg milkfat levy for research and a 5.5 cents/kg milkfat levy for promotion.

The allocation of research funds is administered through the Dairy Research Council. Dairy Research Council supported research covers three broad areas—farm, manufacturing, and economics and marketing. Examples of more specific research include promotion effectiveness, cheese making technology, pasture renovation, animal nutrition and distribution.

PRODUCTION, UTILISATION AND GROSS VALUE OF WHOLE MILK

	Whole milk intake by factories (a)			
Year	*Market milk sales by factories*	*Milk used in the manufacture of dairy products*	*Total intake*	*Gross value*
	—million litres—			$ million
1980–81	1,540	3,703	5,243	885.1
1981–82	1,552	3,716	5,268	1,033.9
1982–83	1,573	3,951	5,524	1,186.5
1983–84	1,572	4,351	5,923	1,153.2
1984–85	1,593	4,445	6,038	1,035.4
1985–86	1,625	4,412	6,037	1,106.7

(a) These milk intake figures have been collected (from milk factories) by the Australian Dairy Corporation and replace statistics of whole milk production and utilisation previously compiled by ABS.

Industry outlook

The short-term future of the Australian dairy industry is very dependent on future developments within the international trading environment. Stocks of butter are still relatively high, and future world prices will obviously reflect changes to these stock levels. While measures have been implemented in the E.E.C. and the U.S.A. to restrict milk production they have had no significant impact.

At present, trade between Australia and New Zealand is covered by a Memorandum of Understanding. This aims to ensure that there is close liaison between the two countries on matters such as third markets, respective domestic issues regarding production, pricing etc., and access to each country's market. Currently, sales growth of New Zealand is restricted to growth in the total Australian market. Access is currently set at approximately a 5 per cent share of the Australian cheese market. However under the terms of the Australia-New Zealand Closer Economic Trade Agreement (CER), trade between the two countries is to be unrestricted by 1995. There will be a review of the CER agreement during 1988 and, the future of the dairy industry will depend, in part, on future negotiations and trade with New Zealand.

While the international market heavily influences the Australian dairy industry, so too does the domestic market. It is possible that the national liquid milk market may be less controlled in the future. This possibility, together with changing consumer preferences provides the Australian dairy industry with significant challenges.

PRODUCTION AND TRADE OF BUTTER AND CHEESE

Year	*Butter*			*Cheese*			
	Factory production	*Exports(a)*		*Factory production(c)*	*Exports(b)*		*Imports*
		Quantity	*Value f.o.b.*		*Quantity*	*Value f.o.b.*	
	'000 tonnes	'000 tonnes	$m	'000 tonnes	'000 tonnes	$m	'000 tonnes
1980–81	79.4	12.0	23.1	136.7	54.1	103.7	13.3
1981–82	76.4	5.0	14.0	153.3	57.5	122.9	16.1
1982–83	88.3	15.5	41.1	158.2	54.5	134.6	19.7
1983–84	111.3	27.4	50.3	161.1	54.6	141.1	22.3
1984–85	114.0	40.7	69.2	159.6	67.6	163.7	22.3
1985–86	105.0	42.9	71.6	170.1	66.1	165.5	20.3

(*a*) Excludes ghee and butter concentrates. (*b*) Includes processed cheese exports. (*c*) Factory production is shown only for non-processed cheese.

APPARENT CONSUMPTION OF MILK, BUTTER, CHEESE AND MARGARINE

Year	*Apparent consumption Total*			*Apparent consumption Per capita per year*				
							Margarine	
	Market milk	*Butter*	*Cheese*	*Market milk*	*Butter*	*Cheese*	*Table*	*Other*
	ML	'000 tonnes	'000 tonnes	Litres	kg	kg	kg	kg
1980–81	1,540	64	98	104.0	4.3	6.6	6.7	2.5
1981–82	1,552	65	105	103.1	4.3	7.0	6.8	2.7
1982–83	1,572	61	113	102.9	4.0	7.4	6.8	2.8
1983–84	1,572	60	118	101.6	3.9	7.7	6.9	2.7
1984–85	1,594	62	126	101.8	3.9	8.1	6.6	2.3
1985–86	1,625	60	125	102.5	3.8	8.0	6.9	2.1

For further details on the dairying industry *see* the publications, *Livestock and Livestock Products, Australia* (7221.0), and *Production Bulletin No. 3: Food, Drink and Tobacco, Australia* (8359.0).

Beekeeping

The beekeeping industry consists of approximately 300–400 full-time apiarists, who produce approximately 70 per cent of Australian honey, and a large number of part-time apiarists who produce the rest. Some of these apiarists move as far afield as from Victoria to Queensland in an endeavour to obtain a continuous supply of nectar for honey from suitable flora. While honey production remains the predominant sector of the industry, production of breeding stock and provision of pollination services is significant.

Exports of honey are regulated by the Australian Honey Board which also promotes honey consumption.

Statistics in the following table relate to apiarists with forty or more hives.

BEEKEEPING STATISTICS

Year	*Number of apiarists*	*Number of beehives*		*Honey produced*			*Beeswax produced*	
		Productive	*Total*	*Quantity*	*Average production per productive hive*	*Gross value*	*Quantity*	*Gross value*
		'000	'000	'000 tonnes	kg	$'000	tonnes	$'000
1980–81	2,224	379	531	19.5	51.5	15,815	366	1,530
1981–82	2,263	405	552	24.8	61.3	18,211	482	1,978
1982–83	2,182	390	540	22.5	57.7	16,605	424	1,613
1983–84	2,148	393	529	25.0	63.6	19,220	467	1,622
1984–85	2,222	413	553	28.0	67.7	21,257	528	2,077
1985–86	2,250	427	560	26.9	63.0	25,387	490	2,035

EXPORTS OF HONEY AND BEESWAX

Year	Honey		Beeswax	
	Quantity	Value f.o.b.	Quantity	Value f.o.b.
	'000 tonnes	$'000	tonnes	$'000
1980–81	8.2	8,985	177	733
1981–82	12.8	10,596	303	1,216
1982–83	14.8	13,075	368	1,387
1983–84	11.0	11,152	256	963
1984–85	17.5	16,480	390	1,589
1985–86	14.6	16,724	292	1,352

Honey levy

The *Honey Levy Acts (Nos. 1 & 2) 1962* impose a levy on domestic sales of honey. The rate of levy is set by regulation up to a maximum of 2.70c per kg fixed by the legislation.

The *Honey Export Charge Act 1973*, imposes a charge on exports of honey. The legislation provides for a maximum charge of 1.5c per kg.

For further information, *see* the publication *Livestock and Livestock Products, Australia* (7221.0).

Eggs and egg products

Commercial egg production in Australian States (incl. N.T. but excl. A.C.T.) in 1985–86 was about 183.1 million dozen. The decrease of recent years is expected to continue as all States endeavour to reach their goal of maintaining quota hen numbers at such levels as will result in production being very close to domestic needs with very little left over for export. Such action has been taken as the net return on exports of shell eggs and egg products has been well below the cost of production in past years.

EGGS AND EGG CONSUMPTION

(million dozen)

Year	Recorded Commercial production	Exports (a)	Apparent consumption in Australia as human food	
			Total	Per capita (number) of eggs
1983–84	197.5	20.1	180.0	140
1984–85	185.8	6.3	178.6	137
1985–86	183.1	7.6	177.4	134

(*a*) Includes shell eggs and egg products in shell egg equivalent.

Exports

The Australian Egg Board, established by Commonwealth legislation in 1947, was responsible for co-ordinating export marketing arrangements. It was empowered to purchase surplus domestic supplies from State marketing authorities, if they so wished, and to arrange to sell such eggs or products on overseas markets.

EXPORTS OF EGGS AND EGG PRODUCTS

Year	Eggs in shell		Eggs not in shell			
			Liquid form		Dry	
	Quantity	Value f.o.b.	Quantity	Value f.o.b.	Quantity	Value f.o.b.
	'000 doz	$'000	tonnes	$'000	tonnes	$'000
1980–81	1,423	1,113	8,508	8,891	50	337
1981–82	1,143	1,095	5,013	6,400	62	219
1982–83	2,672	1,763	3,455	4,108	85	682
1983–84	6,734	3,541	6,892	6,112	95	312
1984–85	1,964	1,837	3,696	4,462	203	1,058
1985–86	2,321	2,013	2,315	2,743	129	652

Following reviews of the Board's operations, in the light of falling export quantities resulting from industry actions to reduce surplus production, the Commonwealth Government announced in August 1984 its decision to abolish the Australian Egg Board. Legislation was enacted late in 1984 to abolish the Board.

Any export marketing is now undertaken by the individual State Board concerned under the aegis of an Exporters Committee established by the Australian Egg Marketing Council (AEMC). The AEMC is a non-statutory body whose membership is made up of the members of the State Egg Marketing Boards.

Exports are predominantly in egg pulp form—white, yolk and whole egg.

Agricultural improvements

Irrigation on agricultural establishments

Irrigation is one of the factors by which agriculture is developed. The variability in stream flow and annual rainfall means that successful irrigation of crops and pastures is dependent on storage. Ground water supplies are also used in areas where the quantity is adequate and the quality is suitable. The area of land irrigated (approximately 1.6 million hectares in 1983–84) forms about 9 per cent of the total area under crops and only 0.3 per cent of the total area of agricultural establishments.

Chapter 16, Water Resources, contains additional details of water conservation and irrigation with international, national and interstate aspects.

Irrigation statistics are collected every three years in the Agricultural Census and represent area actually irrigated. They were collected in the 1986–87 Census.

SOURCE AND USAGE OF WATER, AUSTRALIA

Irrigation— area irrigated, by source 1983–84(b)	*Area*	*Percentage of total area irrigated*	*Estimated annual water use in 1983–84(a)*			
			Irrigation	*Rural (excl irrigation)*	*Urban/ industrial*	*Total*
	'000 hectares		—gigalitres—			
Surface water—						
State irrigation schemes	914.2	56		n.a.		
Rivers, creeks, lakes	367.9	23				
Farm dams	107.3	7				
Total surface water	*1,389.5*	*86*				
Town or country reticulated (*c*)	9.8	1				
Underground (ground water)	225.6	14				
Total, all sources	**1,624.9**	**100**	**10,226**	**1,342**	**3,062**	**14,629**

(*a*) *Source: 1985 Review of Australia's Water Resources and Water Use.* Water Use Data set, Department of Resources and Energy; Australian Water Resources Council. The data in the original are shown by Drainage Division and provide a sound basis for the efficient utilisation of existing resources and the planning of future projects. (*b*) Source is the Agricultural Census and represents area actually irrigated. (*c*) This source represents irrigation water which has come from either surface or underground sources.

Fertilisers

Most Australian soils are deficient in phosphorus. Because of this and the significant but less widespread deficiency of sulfur in many soils, phosphatic fertilisers, particularly single superphosphate, account for the bulk of fertiliser usage. Nitrogen deficiency is also general in Australian soils and the use of nitrogenous fertilisers is increasing. Potassium deficiency however is confined mainly to soils in the higher rainfall areas which are intensively cropped or used for irrigated pastures.

The pattern of fertiliser usage in Australia has changed dramatically in recent years. Prior to 1973–74 the usual consumption ratio of elemental N:P:K has been 2:6:1, but by 1983 the ratio had changed to almost 3:3:1. This variation has resulted from a combination of reduced consumption of phosphatic fertilisers with an increased consumption of nitrogenous fertilisers.

The domestic industry has sufficient manufacturing capacity to meet normal local demand for phosphatic fertilisers but not nitrogenous fertilisers. Australia is dependent on imports of potassic fertilisers, rock phosphate and sulfur. Imports of compounded high analysis fertilisers and specialised fertilisers were insignificant until 1982–83. Since then, however, imports have been rising strongly, largely as a result of oversupply and lower prices on the world market.

ARTIFICIAL FERTILISERS: AREA AND USAGE

Year	*Area fertilised*	*Super-phosphate used*	*Nitrogenous fertilisers used*	*Other fertilisers used*
	'000 ha	'000 tonnes	'000 tonnes	'000 tonnes
1980–81	n.a.	2,947	392	609
1981–82	26,777	2,873	395	599
1982–83	n.a.	2,562	429	633
1983–84	n.a.	2,481	414	721
1984–85	26,407	2,374	421	885
1985–86	25,089	2,160	408	869

Since the Second World War there has been a great expansion of the area of sown pasture accompanied by an increased use of fertilisers. New pasture varieties (including tropical species) have been developed, and nutrient or trace elements deficiencies in soils identified.

The main artificial fertiliser used in Australia is superphosphate, over half of which is used on pastures, mainly in areas with moderate to good rainfall. Large quantities are also used on cereal crops.

SUPERPHOSPHATE USAGE

	Selected crops and pastures					
Year	*Sown and native pastures*	*Lucerne*	*Wheat*	*Other cereals*	*Sugar cane*	*Total*
	AREA FERTILISED ('000 hectares)					
1980–81	13,964	n.a.	8,723	n.a.	291	n.a.
1981–82	12,240	106	9,361	4,034	301	26,777
1982–83	10,711	n.a.	9,299	n.a.	300	n.a.
1983–84	10,175	n.a.	9,672	n.a.	292	n.a.
1984–85	10,686	133	9,694	4,588	297	26,407
1985–86	10,674	n.a.	8,813	n.a.	288	25,089
	SUPERPHOSPHATE USED ('000 tonnes)					
1980–81	1,733	n.a.	756	n.a.	32	2,947
1981–82	1,518	21	801	416	31	2,873
1982–83	1,289	n.a.	777	n.a.	27	2,562
1983–84	1,229	n.a.	720	n.a.	23	2,481
1984–85	1,227	24	618	352	18	2,374
1985–86	1,211	n.a.	499	n.a.	16	2,160

PRODUCTION AND IMPORTS OF FERTILISERS

Item		*1980–81*	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*
		PRODUCTION					
Superphosphate (*a*)	'000 tonnes	3,557	3,464	2,877	2,668	2,647	n.y.a.
Mixed chemical fertilisers (including complete manures)	'000 tonnes	1,277	1,092	967	990	1,167	n.y.a.
Leaf and foliage type fertilisers (including dry and liquid form)	tonnes	n.p.	7,765	6,846	n.p.	n.p.	n.y.a.
Manures (without added chemical fertilisers) (*b*)	tonnes	29,906	26,677	34,128	39,107	37,545	n.y.a.

Crayfish fisherman, Flinders Island, Tasmania.

Eden wharf.

Photographs—
Promotion Aus

Marine turtle industry, Darnley Island.

Photographs—Promotion Australia

Poling tuna, Eden N.S.W.

A Forestry Commission nursery, Sydney.

graphs—*Promotion Australia*

Felling a tree.

Mountain ash.

A cleared forest being prepared for regeneration.

Photographs—Promotion Australia

PRODUCTION AND IMPORTS OF FERTILISERS—*continued*

Item		*1980–81*	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*
IMPORTS							
Crude fertilisers (mainly natural phosphate)	'000 tonnes	2,294	2,772	2,148	1,689	1,763	1,922
	Value $m	102.1	128.6	109.1	86.3	89.5	107.6
Manufactured, mineral or chemical fertilisers—							
Nitrogenous (*c*)	'000 tonnes	86	108	101	91	201	200
	Value $m	12.7	16.2	15.6	14.8	41.8	29.9
Potassic (*d*)	'000 tonnes	213	255	203	228	239	195
	Value $m	21.5	26.7	20.7	23.1	29.3	27.2
Other (*e*)	'000 tonnes	66	92	273	389	437	331
	Value $m	14.8	19.1	53.1	87.8	106.7	89.6

(*a*) Includes double and triple superphosphate and ammonium phosphate in terms of single superphosphate. (*b*) Blood, bone and/or offal, and other material. (*c*) Mainly ammonium nitrate, ammonium sulfate, calcium ammonium nitrate, sodium nitrate and urea containing in the dry state more than 45 per cent by weight of nitrogen. (*d*) Mainly potassium chloride and potassium sulfate. (*e*) Includes phosphatic fertilisers and compounds of the main elements nitrogen, phosphorus and potassium (N.P.K. complete

Agricultural machinery on agricultural establishments

Statistics on the type of agricultural machinery on agricultural establishments were published in early issues of the *Year Book*. Additional information was published in the publication *Agricultural Land Use, Improvements and Labour, Australia, 1980–81* (7103.0). Details of the sales of new tractors for agricultural purposes are given in the quarterly publication *Sales and Stocks of New Tractors, Australia* (8507.0).

Employment in agriculture

Employment on agricultural establishments

Prior to 1976, data on employment collected at the annual Agricultural Census differentiated between permanent full-time employees and temporary employees. Full-time workers excluded casual or seasonal workers and other persons working only part-time. Casual or seasonal workers were shown as temporary employees.

In the past it has been difficult to maintain comparability of employment on agricultural establishments from year to year because of the changing number of lessees and share farmers and because of the tendency of many farmers to include part-time family helpers as full-time workers in their returns. Since World War II there has been a decline in the percentage of people living in rural areas due, in part, to a rising standard of living accompanying the introduction of new techniques and increasing use of capital equipment, fuel, fertilisers, and pesticides. As a result, a smaller agricultural labour force is now producing a larger output of farm products.

EMPLOYED PERSONS IN AGRICULTURE AND SERVICES TO AGRICULTURE
('000)

Month of August	*Males*	*Married females*	*All females*	*Persons*
1981	281.9	87.1	104.6	386.5
1982	281.7	87.1	101.0	382.8
1983	290.2	80.2	94.1	384.2
1984	279.3	80.0	93.8	373.1
1985	287.4	89.5	107.1	394.5
1986	278.4	94.0	112.1	390.6

Regulation of Australian agricultural industries

Year Book No. 61, pages 837–57, contains a summary of the means by which agricultural industries are assisted and regulated. It is not intended as a comprehensive statement of all the consultative and legislative assistance and control measures that exist, but rather as a description of the way in which these processes affect the crops, livestock and livestock products referred to earlier in this chapter.

Agricultural research by CSIRO

Agricultural research, conducted by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) is directed primarily to aspects of agricultural production that are of widespread significance and require mid to long-term research. It is aimed at establishing principles, practices and technologies that will improve the efficiency and long-term viability of Australian agriculture and its capacity to respond to changing needs. This work ranges from studies in basic biology to those designed to integrate new plant varieties, animal breeds and production technologies into sound production systems.

CSIRO's research is appropriate for attacking problems or developing opportunities that transcend State boundaries, are complex and require concentration of disciplinary effort for their solution, and may need sustained long-term effort before they yield practical results. CSIRO's agricultural research complements that of State government departments and universities, and the Organisation attaches considerable importance to collaborative research with them.

CSIRO's agricultural research makes up one-third of its overall research effort and covers the following research areas: plant improvement, plant physiology and biochemistry, soils and plant nutrition, crop and pasture pests and diseases, livestock production, livestock health, and agricultural systems. In addition, secondary industry research directly relevant to the agricultural industries covers wool textiles, food handling, processing and storage, and agricultural and veterinary chemicals. There is also research directly relevant to the agricultural industries carried out within the research area of environmental protection and rehabilitation.

Most of CSIRO's agricultural research is performed within the Institute of Animal and Food Sciences and the Institute of Biological Resources. The Institute of Animal and Food Sciences carries out scientific and technological research aimed at improving the efficiency of livestock production and the quality and safety of human foods. The Institute's activities include research on control of indigenous and exotic animal diseases; nutrition, reproduction, genetics and management of livestock; methods of processing, handling and storing meat, fish, dairy foods, fruit, vegetables and grain; and molecular and cellular biology and its application in the livestock and pharmaceutical industries. This research is performed by the following constituent units of the Institute—Divisions of Animal Health, Animal Production, Tropical Animal Science, Molecular Biology, Food Research, Australian Animal Health Laboratory and the Wheat Research Unit.

Research in the Institute of Biological Resources is directed to improvement of the productivity of Australia's rural industries and conservation of its biotic resources, recognising that the two are highly interdependent. Plants are sources of fibre and food, and the start of all human food chains. Research to optimise plant production is therefore of fundamental importance, and is directed to producing increased quantities of usable plant material of high quality and with least disruption to water resources, soils and fragile ecosystems. Work to increase plant productivity is complemented by research to improve our understanding of the Australian environment. This research is performed by the following constituent units of the Institute—Divisions of Plant Industry, Tropical Crops and Pastures, Horticultural Research, Soils, Water Resources Research, Wildlife and Rangelands Research, Entomology, and the Centre for Irrigation Research.

The Institute of Industrial Technology is also engaged in research of direct benefit to the agricultural industries. Wool textile and marketing research is performed by the Divisions of Protein Chemistry, Textile Physics, and Textile Industry, and research on the design and synthesis of potential agricultural chemicals is performed by the Division of Applied Organic Chemistry.

CHANGING PATTERNS OF LAND USE IN AUSTRALIA

(This special article has been contributed by the Division of Water and Land Resources, CSIRO—written by Dr P. Laut)

The land and its limitations

In terms of world agriculture, Australian agriculture is characterised by:

- its heavy dependence upon overseas markets;
- the large scale of activities compared with similar enterprises in other parts of the world;
- its heavy and long term concentration on a limited range of products;
- its dependence upon a low rainfall, seasonally dry and periodically droughty environment, and a geologically old land resource with limited fertility and relatively high propensity to degradation;
- the relatively high standard of living of the agricultural community.

The outstanding feature of Australian agriculture is its dependence upon overseas markets. As the Australian community consumes only a small part of the country's total agricultural production, most products must be sold in competition with other major producers, many of whom have large populations to help support their industries. Australian agriculturalists must therefore be economically efficient by world standards to compete on world markets.

A large part of the Australian continent is not particularly suited to agricultural production in comparison with the land resources of other major agricultural producers. This is mainly due to the seasonality and limited rainfall of the continent combined with very high rates of potential evaporation, and to prolonged droughts which periodically affect most parts of the Australian continent.

The vast interior of the Australian continent receives little rainfall in either winter or summer (less than 300 mm a year). This, combined with very high potential evaporation (in excess of 3,000 mm a year from a standard pan in which water is available at all times), means that in most years and in most seasons there is a soil moisture deficit. At best, this part of Australia may be used for extensive livestock grazing. As the northern portion of the continent receives almost all its rainfall (400–1,200 mm) during the hot summer months when evaporation is greatest (2,800–3,200 mm a year pan evaporation), it is less effective for plant growth than in the south of the continent. Generally, there is a severe dry period during the winter, with a consequent need for irrigation for any cropping. The exception is the very high rainfall 'sugar coast' of Queensland which receives more than 1,600 mm of rainfall and has less than 1,600 mm pan evaporation.

The southern portion of the continent receives most of its rainfall (400–1,200 mm) during the cooler winter months when pan evaporation is usually less than 1,600 mm a year. Consequently there is more soil moisture available for plant growth for a given amount of rainfall than in the north, especially during the wet winter season, when even relatively dry lands may be used to grow cereal crops. The eastern coastal zone receives more rainfall than most other parts of the continent (800–1,600 mm a year) and has relatively low pan evaporation (less than 1,600 mm a year). This rainfall occurs during all seasons giving a potential growing season longer than for most other parts of Australia. Because of the rugged terrain and cooler temperatures of the eastern highlands, land use is highly varied, ranging from wilderness to intensive cropping and horticulture.

The Australian climate is also well known for its periods of low rainfall or drought which severely reduce the production of crops and animal forage and expose soils to erosion. Between 1965 and 1980, almost all of southern Australia experienced drought conditions, i.e. received less than the 10 percentile long-term rainfall for between 30 per cent and 40 per cent of all months.

At the commencement of European settlement these broad climatic patterns and limitations were unknown. The range and seasonal variability of the continent's regional climates had to be learnt and appreciated, often by bitter experience. Over the past 150 years, cropping activities were often extended well beyond sensible climatic limits, occasionally causing such hardship and environmental damage that government decrees were enacted to limit the geographical extent of cultivation. In South Australia, for example, Goyder's Line was defined in 1865, while in New South Wales the non-agricultural Western Division was designated in 1901.

Within those lands climatically suitable for agriculture, local areas of steeply sloping lands, or lands with particularly fragile soils impose further restrictions on the pattern of land use. In the past, there was very little appreciation of these limitations of the Australian land resource. Very steeply sloping lands were often cleared for grazing and, worse still, for cultivation which led to widespread and severe erosion in areas such as the Southern Tablelands of New South Wales. In the southern pastoral lands where shrub vegetation, 'saltbush' and 'bluebush' provided forage for sheep and cattle, lack of understanding of annual rates of shrub growth led to gross overstocking which, in conjunction with depredation of huge rabbit populations, precipitated very serious losses of vegetative cover and consequent serious soil erosion. Much of western New South Wales for example, which suffered from these depredations, has never fully recovered and sheep numbers today remain well below those at the turn of the century.

Limitations on land for agriculture may be defined in terms of land capability. Most States are now completing land capability mapping for their agricultural lands, assisting land users to avoid mistakes of the past. But land users are frequently unwilling or unable to change land use practices. Sometimes this is because of difficult economic circumstances; at other times it is because land users have little or no understanding of the long-term consequences of their activities.

Information on the harmful effects of certain land use practices has often been ignored with consequent serious long-term effects. Dry land salinity was observed and explained in terms of extensive clearing of native woodlands in Western Australian wheatlands in the mid-1920s, and Victoria in the early 1960s; rising water tables and salinity led to the abandonment of a number of early irrigation areas along the Murray River around the turn of the century; and the serious long-term consequences of rising water tables in the Murrumbidgee Irrigation Area have been known since the 1950s.

The historical development of Australian agriculture

Australian agriculture has passed through the following five broad phases in its continuing evolution since 1788.

1. The earliest phase, from 1788 to around 1820, represents the subsistence period of the early colony.
2. The second phase, from 1820 to 1860, highlights the early export of agricultural commodities.
3. The third phase, from the early 1860s to around the turn of the century, includes the development of the continental pattern of land use.
4. The fourth phase, from 1900 to the 1950s, was a period of adjustment and consolidation.
5. The fifth phase, from the 1950s to the present, has been a period of secondary expansion.

1. 1788–1820

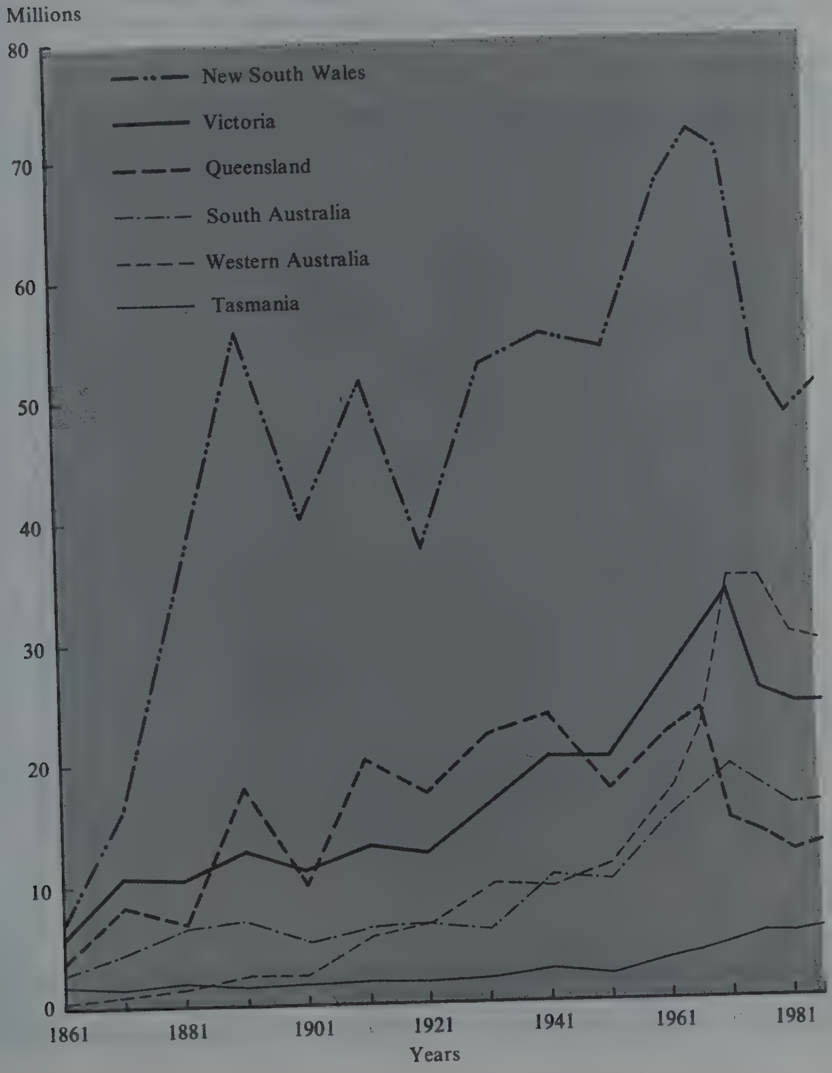
During this period, the colonists of New South Wales and Van Diemen's Land struggled to provide even basic food requirements. They were not always successful in the earlier years and chronic hunger was not uncommon. Lack of agricultural experience, capital equipment of the most rudimentary kinds and of draught animals were complemented by an unknown environment. Towards the end of this period the economic potential of sheep was beginning to be appreciated by Marsden, Macarthur and others, with irregular wool and tallow exports. Exploration, of what proved to be better and far more extensive pastoral lands west of the Dividing Range and the interior of Van Diemen's Land, began in this period. The most important cultivation lands were the Windsor, Parramatta and Liverpool districts near Sydney where wheat and maize were the major crops. Sheep and cattle grazing were concentrated in the Cumberland basin and the south-east of Van Diemen's Land.

2. 1820–1860

This phase was characterised by rapid expansion both of the pastoral industry across Australia and wheat cultivation along the gulf seaboard of South Australia. Elsewhere, grain cultivation stagnated for three reasons: transportation problems were considerable (there were few roads capable of supporting grain laden wagons between the newly settled lands and exporting ports); soils of the older settled areas showed alarming declines in fertility after three to five years of cropping; and wheat varieties particularly suited to the climates of the colonies were not available. However, by the end of this period, draught animals were more plentiful, and manures provided some soil improvement; cultivation and harvesting techniques and machinery suitable for Australian conditions had been developed, for example the wheat stripper; and greater numbers of small farmers or 'dungarees' were turning to wheat cultivation both for export, and throughout the 1850s, to meet an increasing domestic demand.

This period includes three very important changes to the structure of the colonial economies: the cessation of convict transportation; the development of free settler colonies with varying policies for land pricing; and the start of the gold rushes which brought both population and economic wealth to Victoria and New South Wales and later to other colonies. Each had profound effects on Australian colonial agriculture, varying from labour shortages and rapid regional increases in demand for foodstuffs, to long-term land marketing arrangements. By the end of 1860, the combined colonies possessed some 20 million sheep and 4 million cattle, and had almost half a million hectares under cultivation, half of which was wheat. At the end of this period, the broad pattern of Australian dryland agriculture was well towards the making.

FIGURE 1: SHEEP NUMBERS

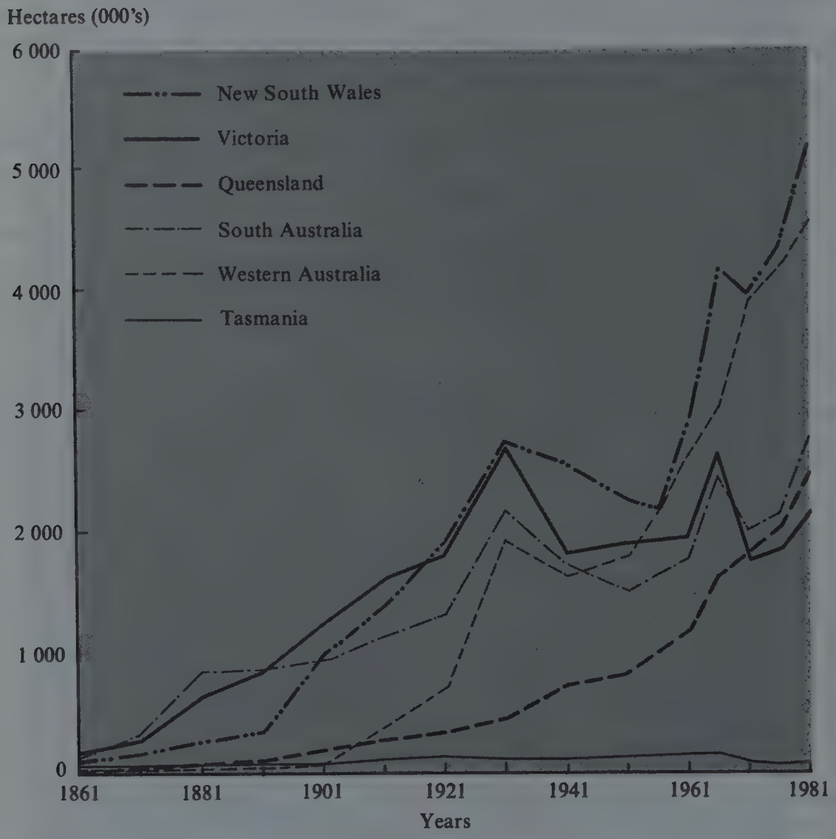


3. 1860–1900

From the early 1860s to around the turn of the century the broad pattern of Australian land use was firmly established through the closer settlement Acts such as the Robertson Acts of New South Wales. In this period, a suitable land and water transportation system, was developed for the movement of agricultural products from source of production to the European and especially British markets. Australia became an important exporter of a wide range of agricultural products: wool, wheat, mutton, beef, fruit, sugar and dairy products.

Cattle numbers for the continent doubled in this period with increases of between nine- and ten-fold in Queensland and Western Australia. Sheep numbers increased three and a half times for all the colonies with a nine-fold increase in Western Australia and a six-fold increase in New South Wales (*see* Figure 1). The area cultivated increased around seven and a half-fold for all colonies between 1860 and 1900 with notable increases of over nine-fold in New South Wales and Queensland and over eight-fold in Victoria and Western Australia (*see* Figure 2). With the exceptions of Queensland and Tasmania, wheat sowings were responsible for most of the increases in cultivated area. In this period, New South Wales and Victoria increased their areas sown to wheat twelve-fold and South Australia and Western Australia, six-fold.

FIGURE 2: AREA CULTIVATED



4. 1900–1950

The broad geographic pattern of Australian agriculture did not alter radically during the first half of the twentieth century. The severe drought in eastern Australia which began in the last years of the nineteenth century continued into the new and, combined with the rabbit plague, wreaked havoc on the agricultural economies of the eastern States. There were also notable regional droughts in the 1930s and 1940s and these, with the Great Depression and World War II, had severe impacts on the regional structure of agriculture, although not its geographical pattern. In particular, the economic depression and the droughts of the 1930s reduced many land holders to penury.

During the period 1900 to 1950, there were general agricultural adjustments in regions of harsher physical environments and livestock densities were permanently reduced throughout much of semi-arid Australia. At the same time there was a retreat from the drier margins of agricultural lands. But in all, this was a period of consolidation, based on the reconciliation of a relatively stable technology with a now reasonably well known environment. The two World Wars brought both benefits and problems. They reduced the supply of labour and capital for agriculture but increased the demand for its products. At the end of World War II there were large quantities of American ex-army equipment available which radically altered the level of mechanisation on Australian farms.

Despite setbacks from droughts, wars and economic depressions, national livestock numbers increased notably from 1900 to 1950, although not nearly as rapidly as in the previous period. Australian cattle numbers increased by 69% and sheep numbers by 60%. Only in the Northern Territory were these increases of the magnitude experienced elsewhere in Australia during the previous 40 years. Similarly, the area of cropland (predominantly sown to wheat) slightly more than doubled in this period.

In a 'dry' continent such as Australia, irrigation is often thought of as a major benefit and in this period State governments strongly supported the development of irrigation schemes. Towns such as Mildura and Griffith were established to service the needs of irrigation farmers and to process their products. By the end of this period the total of actual and planned irrigated land of all types comprised almost 3% of all Australia's crop and pasture lands.

5. 1950–present

This phase of Australian agriculture has involved some remarkable changes in world markets for agricultural products. These changes have precipitated major shifts in the structure and organisation of the agricultural economy. There have been considerable benefits from scientific research into problems of cropping and farm animal husbandry in this period. In particular, the introduction of myxomatosis devastated the immense Australian rabbit population and paved the way for significant increases in livestock numbers. The post-war economic boom and rural to urban migration facilitated widespread mechanisation, which in turn opened up large tracts of hitherto grazing lands in northern New South Wales, central eastern Queensland and southern Western Australia for cereal cultivation. War-time marketing restrictions on agricultural products led to more stable systems for their marketing. Road trucking for livestock helped reduce the impact of local and regional drought. In addition, there has been an expansion of irrigation areas especially for the cultivation of cotton and rice; introduction of a range of new crops such as oil seeds, and improved varieties to suit varying regional conditions; and a general intensification of land use throughout the higher rainfall areas of the southern and eastern portions of the continent.

There have been challenges also to 'traditional' agriculture as the rightful user of all possible lands, and to the right of the agriculturalist to ignore long-term ramifications of land use on the land resource. Conservation has become an important influence, both in the sense of improved management of the agricultural land resource to provide long-term sustainable yields, and in the sense of excluding agriculture from areas set aside for the preservation of native species. Urban development has also claimed notable areas of agricultural land along the margins of Australia's major cities for 'extensive' suburban or 'acreage' development and for recreation.

At the same time there have been considerable external pressures on Australian agriculture. Its traditional major market disappeared with Great Britain's entry into the European Economic Community which, because of the strongly supportive policies of that organisation, has now become a competitor with some of Australia's exports. To counter these losses Australian agriculture has had to turn to the U.S.S.R., Japan, and China to dispose of its products, and has had to adjust to meet their particular requirements.

This has also been a period in which the longer term degradation of the Australian land resource has been irrefutable as the results of long-term overstocking and poor cultivation techniques have been scientifically documented and publicly debated. The dryland salinity problem of Western Australian wheatlands and the rapidly increasing water tables of Murray-

Murrumbidgee irrigation areas are two such major issues confronting not only the agricultural community but the Australian community at large.

During the 1970s and 1980s Australian agriculture has been in a state of continuous flux with agriculturalists experimenting with new techniques and crops; varying the emphasis of their enterprises and gradually increasing the scale of their enterprises to spread the costs of specialised and expensive capital items such as auto-headers and four-wheel drive tractors.

The traditional indicators of Australian agricultural growth, numbers of cattle and sheep and areas of all crops and wheat, remain significant, despite the wide range of changes in the industry. In general over this period, sheep gave way to cattle with a peak in sheep numbers in 1970 and a huge increase in cattle numbers by 1976. Between 1950 and 1980 there was only a 16% increase in national sheep numbers compared to a 79% increase in cattle numbers.

In the same period, the areas sown to all crops and to wheat have grown steadily but consistently with only a 114% increase in cropland and a 125% increase in area sown to wheat. This suggests that with the present world market situation for agricultural products there may be little further increase in arable farming. While on the one hand farmers prefer to move between cropping and livestock as markets change, on the other they are often forced by economic circumstances to cultivate as much area as possible to cover the cost of their expensive cultivation and harvesting equipment. This has occurred to such an extent that many farmers in traditional wool-wheat mixed farming areas no longer follow rotations and have become wheat mono-cultivators. Wheat mono-cultivation, which requires much more precise management to maintain soil fertility and control diseases and weeds, places additional stresses on the Australian land resource, on farm management, and on land administration.

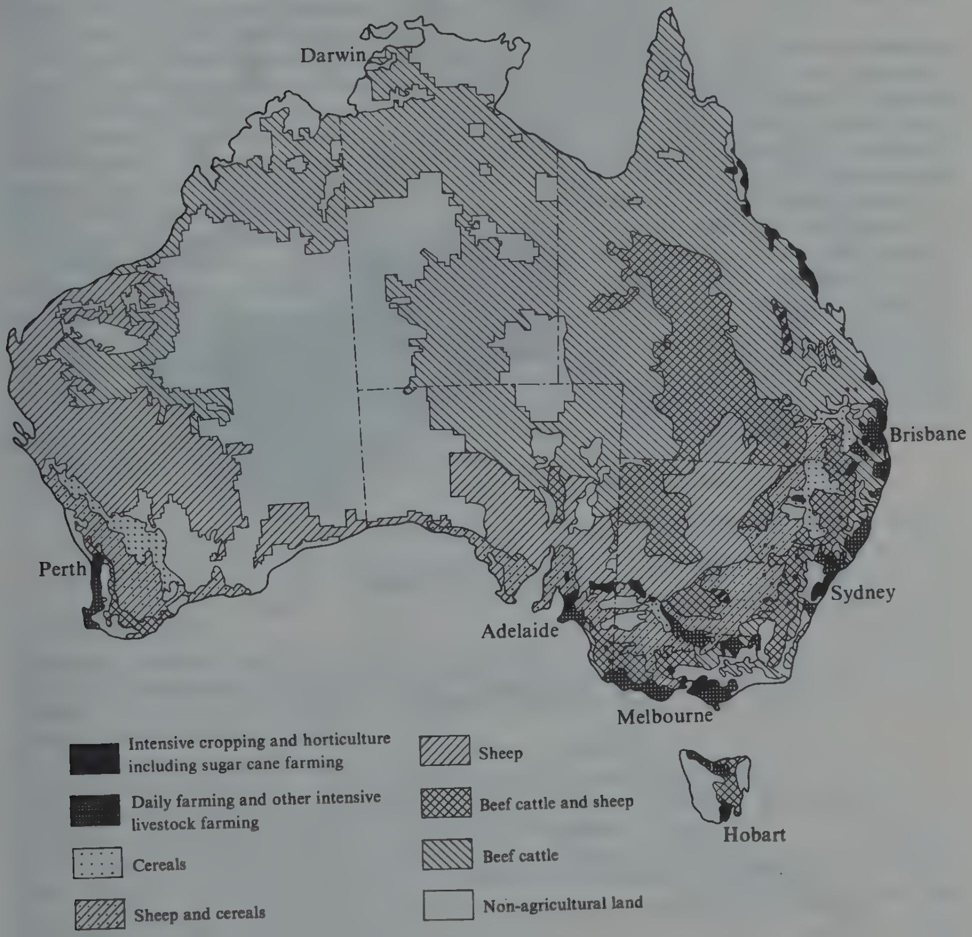
Agricultural land use in the 1980s

In 1984–85 there were some 488 million hectares in agricultural enterprises in Australia. Only 4% of this area was cropped and 6% was under sown pastures and grasses. The remaining 90% remained under modified or unmodified native vegetation. The total area of agricultural land has remained approximately the same over the past decade. Two States, Western Australia and New South Wales, account for approximately 60% of Australia's cropped land but improved pastures are somewhat more evenly distributed amongst the States with New South Wales, Victoria and Western Australia accounting for 67% of the continent's total.

The area of individual establishments varies considerably according to types of activity. Vegetable growing farms or market gardens in Victoria and Tasmania vary from tens to hundreds of hectares, while cattle stations in the Northern Territory are commonly several hundred thousand hectares in extent. However, the mean size of agricultural establishments for each State is generally indicative of productivity of the land resource. The mean area of agricultural establishments for Australia for 1984–85 was 2,800 hectares, varying from 310 and 390 for Victorian and Tasmanian farms respectively, to 1,200 for New South Wales, 3,150 for South Australian, 4,600 for Queensland and 6,750 for Western Australian farms, with the cattle stations of the Northern Territory averaging an enormous 274,000 hectares.

The types and proportions of types of farming establishments also vary considerably from State to State. In 1984–85 Australia had approximately 173,100 agricultural establishments. In all States and the Northern Territory, livestock grazing dominates farming activities. Cereals cultivation and mixed cereals cultivation with sheep or beef cattle involves approximately 20–55% of all farms except in the Northern Territory. Most types of farming are widely spread among States (*see* Figure 3), and conversely most States have a wide range of farm types, with a few exceptions: sugar cane farms are almost exclusively in Queensland (91%) as are peanut farms (99%); tobacco farms are mostly in Queensland (59%) and Victoria (36%) and cotton farms in Queensland (45%) and New South Wales (55%). Agricultural establishments in the Northern Territory are almost exclusively beef cattle stations. Diversity of farm type by State, combined with a degree of flexibility in livestock and cropping components in southern Australia have proved advantageous in periods when one or two agricultural products receive low prices, but offer little advantage during periods of generally depressed agricultural markets.

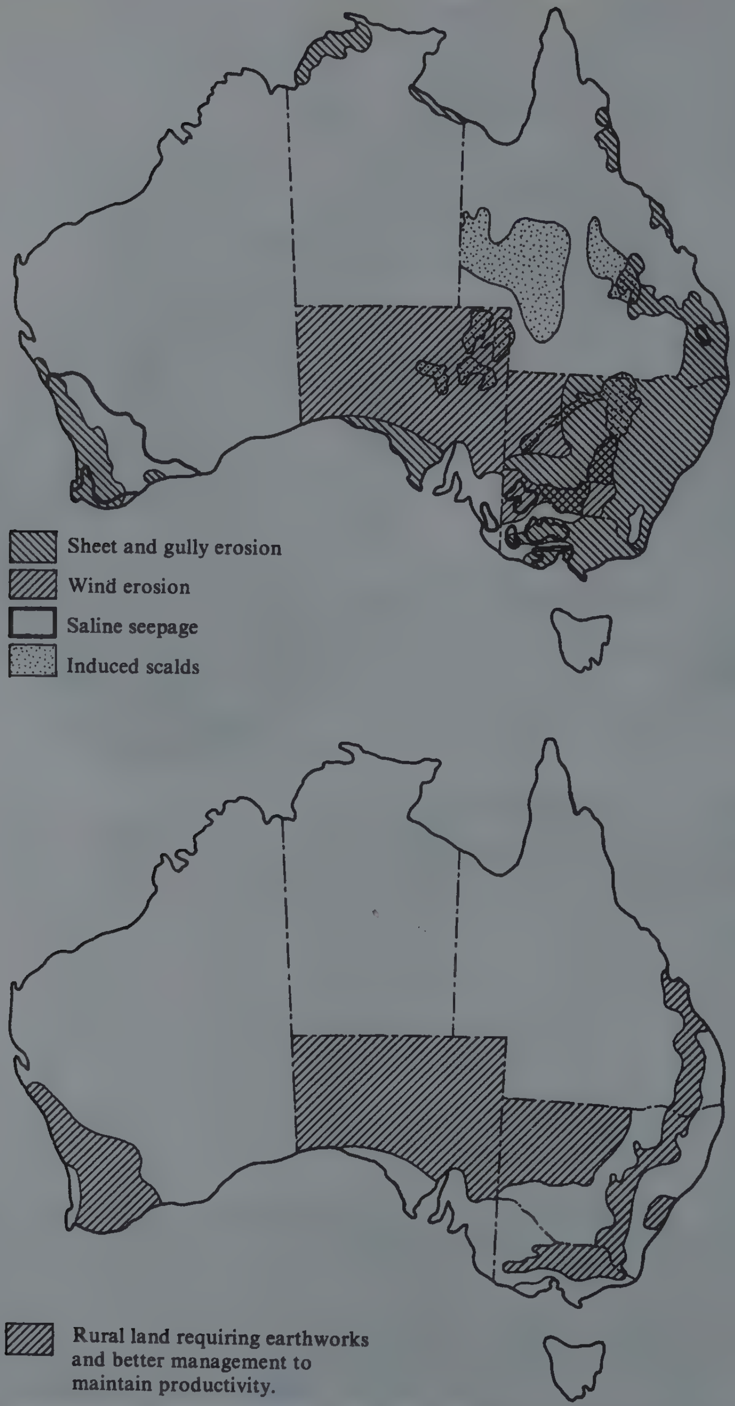
FIGURE 3: FARM TYPES


Darwin
Brisbane
Perth
Sydney
Adelaide
Melbourne
Hobart
Intensive cropping and horticulture including sugar cane farming
Daily farming and other intensive livestock farming
Cereals
Sheep and cereals
Sheep
Beef cattle and sheep
Beef cattle
Non-agricultural land

Source: *Atlas of Australian Resources*, Third Series, Volume 3, Agriculture.

The largest areas of irrigation occur in New South Wales and Victoria which include 41% and 34% of the continent's irrigated lands respectively. In New South Wales almost 60% of these irrigated areas are in State irrigation schemes (56% of irrigated area) and the emphasis has been on high value field and cereal crops such as cotton and rice. In Victoria, where there is also a heavy dependence on State irrigation schemes, emphasis has been on intensive livestock grazing (dairying and fat lambs) and horticulture (dried vine fruits). Queensland which has some 16% of the nation's irrigated lands depends heavily on underground water supplies and only 25% of the irrigated land receives its water from State irrigation schemes. Many of Australia's irrigation areas face serious problems of rising water tables because of the soils on which they were developed and water management techniques employed.

FIGURE 4: LAND DEGRADATION


▨ Sheet and gully erosion
▨ Wind erosion
☐ Saline seepage
▒ Induced scalds
▨ Rural land requiring earthworks and better management to maintain productivity.

Source: *Land Degradation in Australia,* L. E. Woods, AGPS, 1983.

Australian agriculture in the coming decade

It seems likely that Australian agriculture will face a very competitive future with comparatively lower world prices for cereals and meats than have been experienced over the past two decades or so. It is doubtful whether this will markedly alter the structure of the industry or its geography, however it may accelerate trends towards larger and more economically efficient farming enterprises.

Perhaps the most worrying for the longer-term is the degradation of the land resource base of Australian agriculture. It is widely accepted that many of Australia's most productive agricultural lands are at risk to water erosion, wind erosion and salinity. Figure 4, adapted from a national survey of land degradation in the mid-1970s, indicates generally where these problems occur. Other forms of degradation also occur over much of our best agricultural lands but are more readily treated. For example, soil acidity in heavily fertilized grazing lands can be rehabilitated by applications of lime; and areas of soil structural damage caused by continuous use of heavy equipment may be restored by conservation farming techniques.

Australian agriculture will undoubtedly continue to face competition from other forms of land use for resources; plantation forestry is currently replacing marginal agriculture in the higher wetter lands of south-eastern Australia; the requirement for land and water as recreation resources will also expand, and the competition for water resources from urban development will continue to increase. On the more positive side, the agricultural community including farmers, politicians, State government advisors and administrators, and agricultural land and water resources scientists are now well aware of these problems and are constantly seeking ways to assist Australian agriculture evolve to face the world market situation and to ameliorate the effects of resources constraints.

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CHAPTER FOURTEEN

FORESTRY AND FISHING

FORESTRY

Forests are an important national resource, renewable over time and providing a wide range of indispensable products and benefits to the community.

The cover of forest vegetation protects the soil from water and wind erosion, reduces flash flooding and siltation of water storages, and maintains the quality of water. Forests provide habitat for a variety of native animals and plants, many of which depend upon specific forest environments for survival.

Native and plantation forests contribute substantially to the Australian economy and especially to employment in rural areas. Forests also represent ecosystems of value for education, scientific research, tourism, recreation and other purposes. Not all forests are necessarily suitable for all types of uses at the same time. Yet careful management will ensure that the forests provide multiple benefits, in the long-term, for the Australian community.

Forestry in the States and Territories

In the Commonwealth framework, State governments are primarily responsible for land management. Each State has a forest service responsible for the management and control of publicly-owned forests, in accordance with Forestry Acts and Regulations. The Office of the A.C.T. Administration, housed within the Department of the Arts, Sport, the Environment, Tourism and Territories, is responsible for the management and control of forests in the Australian Capital Territory. Forestry in the Northern Territory is the responsibility of the Northern Territory Conservation Commission. In Victoria and Western Australia the former independent forest services have been amalgamated with conservation and land management authorities.

Commonwealth forestry administration

The Department of Primary Industries and Energy is responsible for forestry matters at the national level. Its primary responsibilities are the administration of a control on the export of unprocessed timber; liaison with State, national and international organisations concerned with forestry; and provision of the Secretariat for the Australian Forestry Council.

Existing forest estate

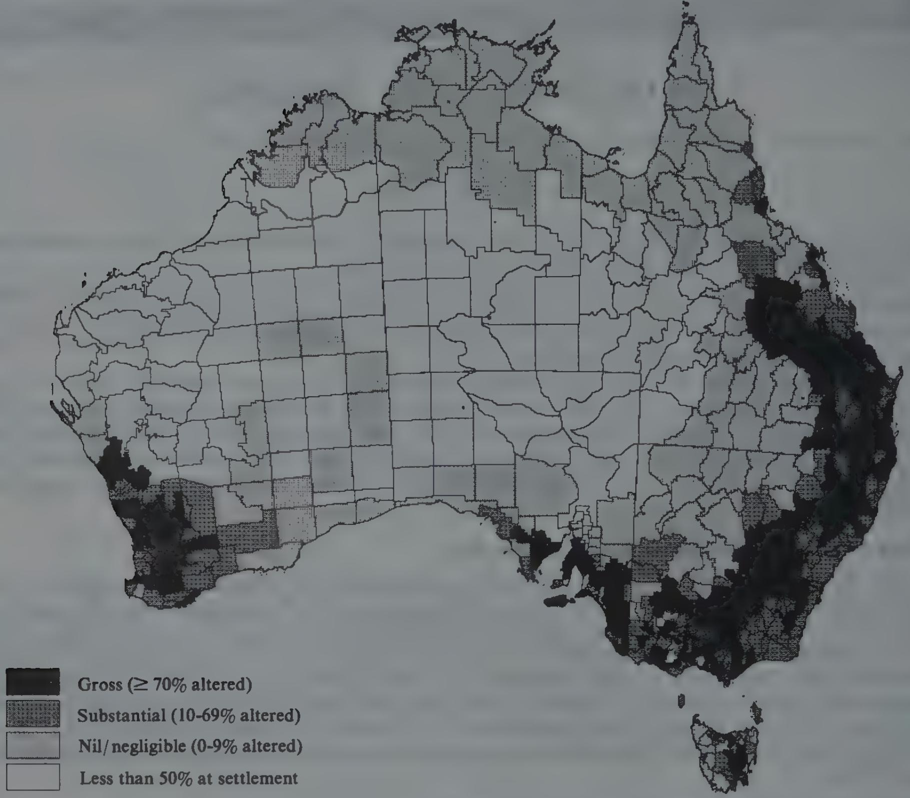
Native forest is defined as land dominated by trees with an existing or potential mature height of twenty metres or more, including native stands of cypress pine in commercial use regardless of height. The total area of native forest was estimated at 41.3 million hectares as at 30 June 1986.

Of the 41.3 million hectares, 30.2 million hectares are in public ownership. The bulk of the 11.0 million hectares of private native forest are not actively managed for wood production and now include 2.4 million hectares of forest in the Northern Territory which were transferred from public to Aboriginal ownership.

Of the 30.2 million hectares of public forests, 5.0 million hectares have national park status and 12.9 million hectares are Crown forests, vacant or occupied under lease on which wood harvesting is carried out under government control but are not reserved and actively managed for wood production. Crown forests include 4.3 million hectares of tropical eucalypt and paperbark forests in northern Australia.

Of the 12.3 million hectares of State forests, 0.6 million hectares are special reserves managed for other than wood production purposes and on 4.4 million hectares, wood harvesting is restricted partly because of management priorities for other values and partly due to present economic inaccessibility. This leaves 7.3 million hectares or 17.7 per cent of a total 41.3 million hectares actively managed for wood production.

DISTURBANCE TO AUSTRALIAN FORESTS AND WOODLANDS SINCE EUROPEAN SETTLEMENT


Gross (≥ 70% altered)
Substantial (10-69% altered)
Nil/negligible (0-9% altered)
Less than 50% at settlement

This map, produced by CSIRO using the Australian Resources Information System (Cocks et al., 1987) shows the extent to which Australian natural forests and woodlands have been disturbed (usually meaning cleared) since European settlement.

For this map, forests and woodlands are defined as including:

- tree communities with at least 10 per cent projected foliage cover;
- tall (>2 m) Eucalypt shrub communities with at least 10 per cent projected foliage cover (e.g. Mallee);
- mangroves.

Two factors, original vegetation and recent land cover, have been combined to estimate the changes to forests and woodlands since European settlement (Wells et al., 1984).

The percentages shown on this map are conservative, i.e. at *least* these percentages of the original forests and woodlands have been disturbed. Estimates of the percentage of forests and woodlands disturbed in each State are:

> New South Wales, 49%; Victoria, 68%; Queensland, 35%; South Australia, 40%; Western Australia, 31%; Tasmania, 36%; Northern Territory, 0%; Australian Capital Territory, 60%.

Sources:

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NATIVE FOREST AREAS CLASSIFIED BY FOREST TYPE, 30 JUNE 1986

('000 hectares)

Forest type group	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Rainforest	265	13	1,237	—	—	499	38	—	2,052
Eucalypt 1	1,207	474	205	—	188	473	—	—	2,547
Eucalypt 2	3,659	4,207	1,290	—	2,764	1,990	—	51	13,961
Eucalypt 3	8,009	577	3,300	—	18	—	—	—	11,904
Tropical eucalypt and paperbark	—	—	4,078	—	—	—	2,450	—	6,528
Cypress	1,819	7	1,686	—	—	—	778	—	4,290
Total	**14,959**	**5,278**	**11,796**	—	**2,970**	**2,962**	**3,266**	**51**	**41,282**

NOTES:

1. Eucalypt forests are grouped into productivity classes in descending order of productivity. No specific indices of productivity have been developed for these classes and there can be some overlap, especially between States, in the relative productivity levels used to assign particular forest types to productivity classes.
2. Tropical eucalypt/paperbark not in commercial use.

NATIVE FOREST AREAS CLASSIFIED BY OWNERSHIP, 30 JUNE 1986

('000 hectares)

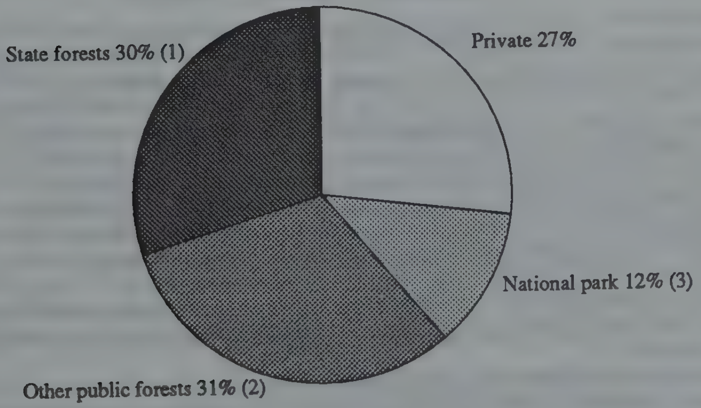
Ownership category	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Public—	9,738	4,673	10,408	—	2,240	2,294	839	51	30,243
1	3,179	2,699	3,283	—	1,946	1,242	—	—	12,349
2	4,783	500	6,257	—	125	677	524	9	12,875
3	1,776	1,474	868	—	169	375	315	42	5,019
Private	5,221	605	1,388	—	730	668	2,427	—	11,039
Total	**14,959**	**5,278**	**11,796**	—	**2,970**	**2,962**	**3,266**	**51**	**41,282**

NOTES:

1. Forest land managed for multiple use including wood production
2. Crown land vacant or occupied under lease on which wood harvesting is carried out under Government control but not reserved for that purpose
3. Land on which wood production is excluded (National Parks etc)

For more details of Australian native forest, see *Year Book* No. 61.

NATIVE FOREST AREA OWNERSHIP/USE



Plantations

Tree plantations of a few coniferous species now provide a large part of Australian-grown wood supplies. The large scale establishment of these plantations was commenced by State Forest Services early this century, and in the case of South Australia, last century, to overcome the shortage of native coniferous timber. In an eleven year period covered by the *Softwood Forestry Agreements Acts 1967*, *1972* and *1976*, the Commonwealth provided financial assistance to the States in the order of $55 million for an extended program of softwood plantation development. A further Act in 1978 provided funds for a five year period to 30 June 1981 for the maintenance of the area of plantations established previously with Commonwealth funds.

Privately owned plantations amount to almost one-third the area under State ownership. New plantations (including replanting) are currently being established at the rate of 30,000 hectares per annum. A detailed account of the history and development of coniferous plantations and of the characteristics of individual species is included in *Year Book* No. 59. The following table shows total area of plantations in Australia classified by species.

PLANTATION AREAS CLASSIFIED BY SPECIES, 31 MARCH 1986

(hectares)

Species group	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Coniferous—									
Pinus radiata	205,582	186,023	3,181	82,585	46,387	62,011	—	13,707	599,476
Pinus elliottii	5,302	3	90,825	—	262	—	—	—	96,392
Pinus pinaster	—	1,414	—	3,540	27,657	—	—	—	32,611
Pinus caribaea	2,428	3	35,833	—	—	—	2,463	—	40,727
Araucaria	1,561	—	44,143	—	—	—	—	—	45,704
Other	5,293	3,009	4,619	385	303	372	2,701	580	17,262
Total	*220,166*	*190,452*	*178,601*	*86,510*	*74,609*	*62,383*	*5,164*	*14,287*	*832,172*
Broadleaved—									
Eucalyptus	—	13,646	1,120	1,182	9,160	11,127	30	—	36,265
Populus	1,965	297	—	—	—	—	—	—	2,262
Other	—	134	637	—	—	1,242	1	—	2,013
Total	*1,965*	*14,077*	*1,757*	*1,182*	*9,160*	*12,369*	*30*	—	*40,540*
Total	**222,131**	**204,529**	**180,358**	**87,692**	**83,769**	**74,752**	**5,194**	**14,287**	**872,712**

Australian Forestry Council

The Commonwealth and the State Governments formed the Australian Forestry Council in 1964 to co-ordinate the development of the nation's forest resource in the general interest of the community. Membership of the council comprises the State and Northern Territory Ministers responsible for forestry and the Commonwealth Minister for Primary Industries and Energy. The New Zealand Minister for Forestry has observer status on Council. The Council is serviced by a Standing Committee and specialist sub-committees.

The Australian Forestry Council's current terms of reference are to:

- promote the management of Australian forests for the benefit of the people of Australia;
- advance the welfare and development of the industries based upon these forests;
- facilitate the exchange of information between parties interested in all the uses and the protection of the forests;
- facilitate consultation and co-ordination between the Commonwealth, State and Territory Governments on forestry matters, especially matters having interstate or national implications;
- formulate and recommend national forest policy for Australia;
- co-ordinate research into all aspects of forestry including the uses of forests and forest products;
- consider matters submitted to the Council by its Standing Committee.

The Council's National Forests Strategy, which outlines important basic principles and goals associated with the management of Australia's forests as well as providing a framework for the general development of programs and ongoing administration, was tabled in Federal Parliament in November 1986.

In recognition of the need to prepare shorter term statements of forestry management objectives, in 1986 the Council initiated the preparation of a draft Public Land Fire Management statement. Its Standing Committee prepared a position paper on Australian Bushfire Research in 1987.

Research

Commonwealth Scientific and Industrial Research Organisation—CSIRO

The Board of CSIRO has decided to combine research on forest production and on the processing of forest products into a Division of Forestry and Forest Products. The Division will continue to be concerned with both native and plantation forests, and with the broad ranges of forest uses including wood production, water supply, ecosystem conservation and scientific reference. The core areas of forestry research are forest ecology, forest diseases, forest physiology, forest operations, fire behaviour and soils nutrition. Work is also carried out on mathematical modelling and seed research.

It will also continue investigations on the properties of wood, and the processing and uses of wood and wood products, to assist in the effective use of Australian wood resources. The programs include processing of wood and timber, technology of fibre separation, wood and fibre properties, composite wood and paper products, assessment of cellulosic resources and conservation of wood-based materials. Technology for the production of high value chemicals from wood and other plant materials is also being investigated.

Tropical rainforest research will be carried out in the Division of Wildlife and Ecology. Other aspects of forestry-related research are carried out in the Divisions of Plant Industry, Entomology, Soils and Water Resources.

Education

The Australian National University and the University of Melbourne offer undergraduate courses leading to a Bachelor of Science degree in Forestry. Most States provide for sub-professional forestry training.

Each year, the Department of Primary Industries and Energy makes available postgraduate awards for full-time research, leading to the degree of Master and/or Ph. D at an Australian university. The Department also administers an award funded from a private bequest for postgraduate study at Oxford University for one year.

Timber and timber products

The selected details shown below have been compiled from the annual census of manufacturing establishments.

The woodchip export industry uses timber which is unsuitable for sawmilling and is not required by the Australian pulp, paper and reconstituted board industries. Before the advent of the woodchip export industry much of this material was left standing in the forest after logging, where it inhibited regeneration. After several cycles of selective logging since European settlement, many forests contained large volumes of over-mature and defective timber for which there was no market. The woodchip export industry, by making it economic to remove this poor quality timber, has enabled degraded forests to be regenerated into faster-growing, more productive ones. Considerable quantities of sawmill waste material, which would otherwise be burnt, are also chipped for local pulpwood-using industries and for export.

About 4.5 million tonnes of woodchips worth $260 million were exported from Australia in 1986. Over 95 per cent of Australia's woodchip exports go to Japan where they are used to produce high quality printing and writing papers. The remainder goes to Korea and Taiwan.

MANUFACTURING ESTABLISHMENTS(*a*)—SUMMARY OF OPERATIONS, 1984–85

1983 ASIC(b) code	*Industry description*	*Establishments at 30 June*	*Persons employed (c)*	*Turnover*	*Value added*	*Fixed capital expenditure less disposals*
		No.	No.	$'000	$'000	$'000
2531	Log sawmilling	632	11,134	681,190	377,294	19,744
2533	Veneers and manufactured boards of wood	76	5,264	540,891	198,556	20,956
2537	Hardwood woodchips	10	746	203,594	83,295	2,929

(*a*) All manufacturing establishments owned by multi-establishment enterprises and single establishment enterprises with four or more persons employed. (*b*) Australian Standard Industrial Classification. (*c*) Average over whole year includes working proprietors.

TIMBER AND SELECTED TIMBER PRODUCTS (*a*)

Item		*1982–82*	*1983–84*	*1984–85*
Undressed sawn timber—				
Recovered from sawn logs—				
Australian grown—				
Broadleaved	'000 cu m	1,788	1,829	1,932
Coniferous	"	1,196	973	1,055
Total	"	**2,984**	**2,802**	**2,987**
Woodchips (green weight)—				
Hardwood (broad leaved)	'000 tonnes	4,031	4,551	4,817
Plywood—				
Commercial—(surface measure)	'000 sq m	4,239	5,662	5,774
(1 mm basis)	"	37,750	48,119	55,379
Waterproof—(surface measure)	"	1,829	2,407	1,846
(1 mm basis)	"	18,938	19,646	15,446
Particle board (resin bonded)	'000 cu m	572	673	696
Wood pulp—				
Chemical	tonne	155,675	180,406	240,874
Mechanical	"	470,207	601,196	612,837
Other	"			
Paper—				
Newsprint	tonne	365,802	365,363	364,685
Printings	"	94,662	131,137	128,839
Wrapping (incl. kraft)	"	302,372	352,230	335,668
Writing and duplicating (*b*)	"	84,326	91,572	92,788
Other paper (incl. blotting)	"	38,456	32 246	38,271
Tissue and sanitary papers	"	114,249	119,740	116,416
Paperboard (incl. strawboard)	"	429,336	450 525	501,793

(*a*) Excludes production of small single establishment enterprises with less than four persons employed and establishments engaged in non-manufacturing activities but which may carry on, in a minor way, some manufacturing. (*b*) Includes cartridge.

The value of imports of forest products in 1985–86 was in the order of $1,441 million while the value of exports of timber products was $347 million of which $238 million was from woodchips.

SAWN TIMBER AND MAJOR TIMBER PRODUCTS 1985–86

(*Source:* Bureau of Agricultural Economics and Australian Bureau of Statistics)

Item		*Production (1)*	*Imports (2)*	*Exports (3)*	*Domestic Consumption (1+ 2−3)*
Sawn timber	cu m	2,998,010	1,255,564	31,119	4,222,455
Plywood	cu m	95,895	82,586	91	178 390
Railway sleepers	cu m	216,642	3	2 540	214 105
Particleboard	cu m	688 253	8,190	7,638	688,805
Hardboard	cu m	97,000	4,285	6,512	94,773
Newsprint	tonne	362,954	256,604	4,080	615,478
Printing and writing	tonne	255,034	210,052	20,977	444,109
Other paper	tonne	504,698	197,190	56,787	645,101
Paperboard	tonne	472,612	50,649	4,995	518,266

In addition to the products listed above, exports for 1985-86 of pulpwood (virtually all in the form of woodchips) were 4,729,892 tonnes (green).

FISHING

Source and basis of statistics

Statistics presented in this section are obtained from the collections of State Fisheries Authorities. In all States except Queensland and Tasmania, the information is derived from returns collected from licensed fisherpersons. In Queensland the statistics have, to date, been based mainly on Fish Board receipts, but a new collection from fishermen, fish wholesalers and processors is now being developed. Tasmanian data are obtained from buyers and processors. Additionally, details of New South Wales tuna production are supplied by CSIRO and particulars of Australian pearl culture have been collected and supplied by the Australian Fisheries Service, Department of Primary Industries and Energy.

Australian fisheries production statistics are generally in terms of the form in which the products are taken from the water. For example, the statistics of fish production published in this chapter are in terms of 'estimated live weights' which are calculated from landed weights by using conversion factors for each species in each State. These conversion factors allow for the fact that the quantities of fish reported are frequently in a gutted, headed and gutted, or otherwise reduced condition. Crustaceans are reported on an 'estimated live weight' basis and molluscs (edible) on a 'gross (in-shell) weight' basis. The figures for pearl shell and trochus shell refer to the actual quantities of dry shell for sale and exclude the weight of the fish.

For more details of employment and boats and equipment for general fisheries and particulars of the whaling industry see earlier *Year Books.*

Fisheries resources and their commercial exploitation

Fish

Over 3,000 species of marine and freshwater fish occur in and around Australia. Australian fisherpersons concentrate their efforts on estuarine, coastal, pelagic (surface and mid-water swimming) and demersal (bottom living) fish that occur off the north-east, south-east and south-west coasts. Off north Australia, barramundi (*Lates calcarifer*) constitutes the most important estuarine and coastal species, while in the south-east and south-west regions, mullet (mainly *Mugil cephalus*), bream (*Acanthopagrus* spp.), Australian salmon (*Arripus trutta*) and Australian herring (*Arripus georgianus*) are important catch components.

Major pelagic fisheries are Spanish mackerel (*Scomberomorus commersoni*) off north Australia, and southern bluefin tuna (*Thunnus maccoyii*), jack mackerel (*Trachurus declivis*) snoek (*Leionura atun*), pilchards (*Sardinops neopilchardus*) and anchovies (*Engraulis australis*) off south-east Australia. Southern bluefin tuna are also fished off south-west Australia.

A large multispecies demersal fishery that targets on flathead (*Neoplatycephalus* and *Platycephalus* spp.), morwong (*Nemadactylus* spp.), redfish (*Centroberyx affinis*), gemfish (*Rexea solandri*), orange roughy (*Hoplostethus atlanticus*), trevally (*Pseudocaranx dentex*) and blue grenadier (*Macruronus novaezelandiae*), exists off south-east Australia. Demersal inshore snapper (*Chrysophrys auratus*) fisheries exist off south-west and south-east Australia; in the latter region, stocks of whiting (*Sillaginidae*) are also fished. In the northern tropical region, reef fish such as cods (*Epinephelus* spp.) are exploited. A large demersal fishery for school and gummy sharks (*Galeorhinus australis* and *Mustelus antarcticus,* respectively) is centred in Bass Strait.

Establishment of the 200 nautical mile Australian Fishing Zone (AFZ) in 1979 covering a total of 8.9 million square kilometres, brought portions of oceanic tuna stocks, and demersal and pelagic fish stocks previously exploited by foreign fishing vessels, under Australian control. Foreign fishing operations in the pelagic gill-net fishery off the north coast catch sharks (mainly *Carcharhinus* spp.), tuna (*Thunnus tonggol*) and Spanish mackerel; while in the demersal pair trawl fishery off the north-west coast, a tropical multispecies fauna, that includes threadfin bream (*Nemipteridae*), tropical snappers (*Lutjanidae*), emperors (*Lethrinidae*), goatfish (*Mullidae*) and hair tails (*Trichiuridae*) is taken. Following the introduction of controls on the length of gill-nets which can be used, foreign pelagic gill-net operations have ceased.

Crustaceans

Prawns (*Penaeus* and *Metapenaeus* spp.) provide the most valuable fishery in Australia and are taken in estuarine, coastal and offshore waters of all States except Tasmania. The western and southern rock lobsters (*Panulirus longipes cygnus* and *Jasus novaehollandiae*), also a valuable resource, are taken on rocky reefs around the southern half of Australia. Bay lobsters (*Thenus* spp. and *Ibacus* spp.) are taken incidentally to prawn trawling operations. Crabs (*Scylla* spp. and *Portunus* spp.) are taken mainly in Queensland, New South Wales and Western Australia.

Molluscs (edible)

Naturally-occurring oysters are harvested in all States; in New South Wales and Queensland the Sydney rock oyster (*Crassostrea commercialis*) is cultured commercially. The introduction of the Pacific oyster (*Crassostrea gigas*) to Tasmania and South Australia has provided a limited supply in those States. Following a serious decline in catches in the scallop (*Pecten meridionalis*) fishery based on stocks in Port Phillip Bay in Victoria, new offshore beds were located in southern New South Wales, eastern Victoria, northern Tasmania and south-western Western Australia. However, substantial fluctuations in abundance have resulted in erratic production from year to year. A fishery based on the saucer scallop (*Amusium balloti*) is located off south and central Queensland and there is a small fishery for the same species in Shark Bay, Western Australia. An important abalone (*Haliotus* spp.) fishery has been developed since 1964 in south-east Australia with Tasmania, Victoria and South Australia providing the bulk of the catch. There is also a small abalone fishery in south-west Australia. Mussels (*Mytilus planulatus*) are harvested in Victoria, Western Australia and New South Wales. Prior to 1978 small quantities of cephalopods, mainly squid, were produced in many localities. Feasibility fishing located promising squid resources (*Nototodarus gouldi*) in the south-east. Squid (*Loligo* spp.) form an important component to the trawl catch in the Arafura Sea.

Pearl shell and trochus shell

The shell of the Australian species of pearl oyster (*Pinctada maxima*) is taken from various localities in the tropical waters of Australia, between Broome in Western Australia and Cairns in Queensland, for the manufacture of buttons, knife handles, etc. Live pearl shell is used for pearl culture, *Pinctada maxima* being capable of producing pearls which are the largest in the world and which command top market prices. Trochus shell is found mainly on coral reefs off the Queensland coast, although small quantities occur in Western Australia.

Whales

Whales are now a protected species in the AFZ.

Fisheries administration and research

The Commonwealth Parliament has enacted a number of laws dealing with fisheries in Australian waters beyond territorial limits. The fisheries laws of the States and the Northern Territory apply to all kinds of fishing within the territorial sea and in inland waters. These laws require the licensing of persons and boats in the commercial fisheries and provide a range of other regulatory powers. The Commonwealth Government laws relating to fishing are outlined below.

Fisheries Act 1952

This Act applies to commercial fishing for swimming species, by Australians in waters extending from 3 to 200 nautical miles seaward of the territorial sea baseline of Australia and the external territories excluding the territorial sea of another country, and by foreign boats in the 200 nautical miles AFZ. The AFZ comprises waters which extend 200 nautical miles seaward of Australia's territorial sea baselines but does not include territorial seas within the accepted fishing zones of adjacent countries or waters adjacent to Australia's Antarctic Territory.

Continental Shelf (Living Natural Resources) Act 1968

This Act regulates the searching for and taking, from the continental shelf of Australia and the external territories, of living sedentary species by Australians and foreigners. Sedentary species are those that, at the harvestable stage, are either immobile on or beneath the seabed or are unable to move except in constant physical contact with the seabed. The continental shelf is the seabed beyond the territorial sea and adjacent to permanently exposed land masses, extending to a depth of 200 metres or, beyond that depth, to where the exploitation of the seabed is possible.

Torres Strait Fisheries Act 1984

This Act gives effect in Australian law to the fisheries elements of the Torres Strait Treaty. The Act applies in the area of Australian jurisdiction in the Torres Strait Protected Zone and areas outside but near that zone proclaimed in respect of particular fisheries which Australia and Papua New Guinea have agreed to manage jointly under the Treaty, or which are referred to in the Treaty.

These three Acts require the holding of licences and empower the Minister to prohibit fishing activities as necessary for the conservation of resources and the management of the fisheries. The *Fisheries Act 1952* authorises the publication of management plans having the force of law in relation to particular fisheries.

Foreign Fishing Boats Levy Act 1981; *Fisheries Agreements (Payments) Act 1981*

These Acts facilitate the imposition and collection of access fees for foreign boats fishing in the AFZ.

Fisheries Levy Act 1984

This Act imposes a levy on prescribed classes of licences under the *Fisheries Act 1952* or the *Torres Strait Fisheries Act 1984* or on units of fishing capacity created by management plans under the first of those Acts.

Administration

Australian fisheries are administered by the authority having jurisdiction over the waters concerned. In inland waters and in waters within territorial limits, administration is the responsibility of the State or Territory fisheries authority. In proclaimed waters, and on the continental shelf beyond territorial limits, administration is the responsibility of the Commonwealth Government which, by agreement, has delegated to State Fisheries Authorities the necessary authorities for day-to-day administration of the Acts.

The Commonwealth and all State Parliaments, as well as the Northern Territory House of Assembly, have enacted amendments to fishery laws for the purpose of implementing the fisheries elements of the offshore constitutional settlement adopted by the Premiers' Conference in 1979. Those amendments, which came into force on 14 February 1983, authorise the Commonwealth and one or more States to enter into a formal legal arrangement to apply a single law (Commonwealth or State) to the management of a particular fishery from low water mark and to vest executive power under that law in:

(i) a joint authority, the membership of which would comprise the Commonwealth and the relevant State or States;
(ii) a State alone; or
(iii) the Commonwealth alone.

The Offshore Constitutional Settlement (OCS) is now in place for fisheries in waters off five states; Queensland, South Australia, Western Australia, Tasmania and Victoria. OCS arrangements simply rationalise jurisdiction and do not specify new rules for management of the fisheries concerned. This rationalisation of responsibilities will not only reduce administration costs but will mean that many fisherpersons will only require one fishing licence in future.

The administration of the fisheries is directed to a number of objectives. The two most important are conservation and management of the living resources of the AFZ to ensure that they are not endangered by over exploitation; and achievement of the optimum utilisation of the living resources by the Australian fishing industry and foreign interests. Consistent with these objectives a number of controls have been introduced to prevent the depletion of the more heavily fished species and to ensure the optimum utilisation of resources. These controls take the form of individual transferable catch quotas, seasonal and area closures, gear limitations, minimum size requirements and limited access rights, as well as outright prohibitions on the taking of certain species.

The Fisheries Development Trust Account (established under the *Fishing Industry Act 1956*) and the Fishing Industry Research Trust Account (established under the *Fishing Industry Research Act 1969*) are available to support, financially, projects for the development and management of the fisheries and fishing industry which are consistent with the purposes of those Acts. The former was established with the proceeds of the sale of the assets of the Australian Whaling Commission and is replenished from Consolidated Revenue as necessary. The latter is a matching fund into which is paid each year an appropriation from Commonwealth Government Revenue equal to amounts collected from the fishing industry by the State Fisheries Authorities and paid into appropriate State research accounts for the same purpose.

Research

The main aim of fisheries research in Australia is to provide a background of biological, technical and economic information which will provide guidance for the efficient and rational utilisation of fisheries resources. To this end much of the research already undertaken has been directed at formulating recommendations for management of various fisheries. Research work, including feasibility fishing projects involving foreign fishing vessels, is also carried out and is expected to lead to the development of new fisheries, the expansion of under-exploited fisheries, greater economy in operations and the use of more efficient equipment and methods.

Organisations in Australia at present engaged in research into fisheries matters are:

(i) CSIRO Division of Fisheries Research, which has its headquarters and main laboratory at Hobart, Tasmania, and regional laboratories in Western Australia and Queensland (fisheries science);
(ii) CSIRO Division of Oceanography, which has its headquarters and laboratory at Hobart, Tasmania;
(iii) CSIRO Division of Food Research, conducts research into handling, storage, processing and transportation of fish at its laboratory in Hobart, Tasmania;
(iv) State fisheries departments with laboratories have been established in Sydney, Melbourne, Brisbane, Perth, Hobart, Darwin and Cairns; research vessels are operated by New South Wales, Victoria, Queensland, Western Australia, South Australia and Tasmania;
(v) Bureau of Rural Research, Department of Primary Industries and Energy, Canberra;
(vi) Bureau of Agricultural Economics, Canberra (economic and marketing research); and
(vii) private fishing companies (surveys of fisheries resources, research into handling, processing and marketing).

Boats and equipment used in fisheries

Fish, crustaceans and molluscs (edible)

The boats used for the estuarine fisheries are mostly small vessels propelled by diesel or petrol engines of low power. The offshore vessels range up to 40 metres in length and are almost invariably powered by diesel engines. Most of them have either insulated holds and carry ice, or are equipped with dry or brine refrigeration. Some rock lobster vessels are fitted with wells in which the catch is kept alive.

The following are the types of equipment most commonly used in the main fisheries: *mullet*—beach seine, gill-net; *shark* (*edible*)—long-lines, gill-net; *Australian salmon*—beach seine; *snoek*—trolling lines; *flathead*—Danish seine, otter trawl; *snapper*—long-lines, traps, gill-net, handline; *morwong*—Danish seine, otter trawl, traps; *whiting*—handline, otter trawl, Danish seine, beach seine, gill-net; *garfish*—beach seine; *Spanish mackerel*—trolling lines; *tuna*—pole and live-bait, purse seine, trolling lines (lampara nets and purse seines are used for taking live bait for tuna); *prawns*—otter trawl, beam trawl, beach seine net; *rock lobster*—pots, traps; *scallops*—dredge, otter trawl; *abalone*—diving using hookah gear; and *pilchards, anchovies, jack mackerel* and *stripped tuna*—purse seine.

Pearls, pearl shell and trochus shell

Ketch-rigged luggers about 15 metres long which carry crews of eight to fourteen members are used for pearl shell fishing in northern Australia.

Production, processing and domestic marketing of fisheries products

Value of fisheries production

The following table shows the gross value of fishing by States. As the value of materials used in the course of production is not available for all States, it is not possible to show a comparison of net values. Gross value of production is the value placed on recorded production at the wholesale price realised in the principal markets. In general, the 'principal markets' are the metropolitan markets in each State, although, in cases where commodities are consumed locally or where they become raw material for a secondary industry, these points are presumed to be the principal markets. Gross value includes marketing costs which were estimated at $18.8 million for Australia for the year 1979–80. Details on marketing costs are not available for 1980–81 and subsequent years.

Australian totals are not available beyond 1980–81, due to estimates for various States not being available.

FISHERIES: GROSS VALUE OF PRODUCTION

($'000)

Year	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*Aust.*
			GROSS VALUE					
1977–78 . .	39,665	17,997	(*a*)40,808	(*b*)23,615	88,340	12,609	10,337	(*c*)233,351
1978–79 . .	42,698	20,025	58,214	(*b*)29,924	80,233	14,636	19,576	(*c*)(*d*)279,258
1979–80 . .	58,661	27,696	(*e*)62,789	(*b*)35,438	85,652	20,463	16,806	(*c*)(*d*)325,632
1980–81 . .	73,048	33,440	(*e*)(*f*)86,292	(*b*)46,606	82,764	26,514	19,518	(*c*)(*d*)386,533
1981–82 . .	74,983	30,525	n.a.	52,062	99,254	32,896	18,392	n.a.
1982–83 . .	73,896	31,022	n.a.	61,234	126,208	31,140	19,286	n.a.
1983–84 . .	73,235	34,060	n.a.	58,863	141,425	39,133	20,659	n.a.
1984–85 . .	n.a.	45,998	n.a.	67,973	163,347	47,036	17,207	n.a.
1985–86 . .	n.a.	n.a.	n.a.	76,017	138,690	59,292	29,378	n.a.

(*a*) Incomplete: excludes oysters and rock lobster. (*b*) Incomplete: excludes octopus, cuttlefish, oysters and scallops. (*c*) Incomplete: *see* individual States. (*d*) Includes value of pearling which has been excluded from State totals. (*e*) Incomplete: excludes rock lobster. (*f*) Incomplete: excludes shark.

Production of selected fisheries

SELECTED FISHERIES PRODUCTS: PRODUCTION AND GROSS VALUE

1985–86

Product	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*Aust.*
			QUANTITY (tonnes)(*a*)					
Fish	n.a.	n.a.	n.a.	18,602	18,003	25,214	2,523	n.a.
Crustaceans	n.a.	n.a.	n.a.	4,322	10,140	1,457	3,439	n.a.
Molluscs (edible)	n.a.	n.a.	n.a.	1,709	2,622	7,295	36	n.a.
			GROSS VALUE ($'000)					
Fish	n.a.	n.a.	n.a.	24,559	20,502	7,288	3,973	n.a.
Crustaceans	n.a.	n.a.	n.a.	42,722	110,829	16,236	25,353	n.a.
Molluscs (edible)	n.a.	n.a.	n.a.	8,736	7,359	35,767	51	n.a.

(*a*) Estimated live weight.

Processing of fish, crustaceans and molluscs

Processing plants are located strategically throughout Australia close to fishing grounds. A number of shore-based plants have been established in northern Australia to service the northern prawn fishery.

Rock lobsters, prawns, abalone, tuna, scallops and some fin fish are frozen for export; tuna, snoek, Australian salmon and abalone are canned; small amounts of fish are smoked; and some molluscs are bottled. Hand labour is still used extensively in processing operations, but mechanisation is being progressively introduced.

Ice is used extensively for the chilling of fish taken in estuarine and inshore fisheries. Refrigeration is used particularly on vessels operating in the tuna and prawn fisheries to chill or freeze the catch. An increasing range of fish products, including fresh-chilled tuna, live rock lobster, abalone and sea urchin roe, are being air-freighted to export markets, particularly Japan.

Fish, crustaceans and molluscs intended for export are processed in establishments registered under the Export (Fish) Regulations. Edible fish for local consumption is mainly dispatched fresh-chilled to markets.

Pearls, pearl shell and trochus shell

PEARL CULTURE AND PEARL AND TROCHUS SHELL FISHING OPERATIONS(*a*)

(*Source:* Department of Primary Industries and Energy)

		1983	*1984*	*1985*
QUANTITY				
Pearl and Trochus shell fishing operations—				
Production of—				
Pearl shell(*b*)	tonnes	171	103	117
Trochus shell	tonnes	n.p.	n.p.	n.p.
Natural pearls	momme(*c*)	n.p.	n.p.	n.p.
Pearl culture operations—				
Live shell introduced	No.	244,695	182,452	173,577
	tonnes	95	74	56
Production—				
Round and baroque pearls	No.	111,035	86,934	54,040
	momme(*c*)	74,532	67,370	53,761
Half pearls	No.	166,754	210,718	185,083
Manufacturing shell	tonnes	42	40	53
VALUE ($'000)				
Pearl and Trochus shell fishing operations—				
Production of—				
Live pearl shell		2,756	1,656	1,831
Pearl shell		194	73	248
Trochus shell		n.p.	n.p.	n.p.
Natural pearls		n.p.	n.p.	n.p.
Pearl culture operations—				
Production of—				
Round and baroque pearls		12,333	16,988	13,616
Half pearls		1,090	1,323	1,289
Manufacturing shell		58	79	117

(*a*) Figures refer to the fishing season commencing in the years shown. (*b*) Excludes manufacturing shell produced from pearl culture operations. (*c*) A pearl weight measurement equivalent to 3.769 grams.

Domestic marketing of fisheries' products

Although a substantial proportion of the tuna and Australian salmon catches are canned, the greater part of Australian fish production is marketed fresh-chilled.

Marketing arrangements for fresh fish vary. In New South Wales, fish marketing is the responsibility of the Fish Marketing Authority which operates the Metropolitan Fish Markets. In other coastal centres of New South Wales, fisherpersons' co-operatives may become registered as local fish markets. In Queensland until recently the Fish Board sold all production on behalf of fisherpersons in that State, except fish intended for export and interstate trade. However, new legislation was passed in March 1982 giving fisherpersons a choice of selling their catch either through the Fish Board, fisherpersons' co-operatives or licensed private processors and wholesalers. In Victoria, Western Australia, South Australia and Tasmania, there is no restriction on market outlets. In Victoria, Western Australia and South Australia, most fish is sent to metropolitan wholesale fish markets for auctioning; small quantities are processed for sale locally, chiefly by co-operatives. Nearly all fresh fish in Tasmania is consigned direct to processors. The principal outlets for fish products in Australia are retail and catering establishments.

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CHAPTER FIFTEEN

MINERAL INDUSTRY

Geology and mineral resources

General geology

Most of the western and central part of the Australian continent consists of basement rocks of Precambrian age. Younger Palaeozoic rocks, mostly of geosynclinal origin, form a discontinuous belt several hundred kilometres wide extending from north Queensland to Tasmania. Mesozoic platform sediments form a broad zone separating the Palaeozoic and Precambrian rocks and extending from the Gulf of Carpentaria to central New South Wales. Cainozoic rocks occur mainly in Victoria, south-western New South Wales and southern South Australia, and as residual basalt cappings over extensive areas of the Palaeozoic rocks of eastern Australia.

Economic geology

Minerals of economic significance occur throughout Australia, their geological age ranging from Precambrian to Recent. Many of the large deposits such as those at Broken Hill (New South Wales), Mount Isa (Queensland), Olympic Dam (South Australia) the Kalgoorlie and Pilbara regions of Western Australia and the Alligator Rivers area of the Northern Territory are Precambrian in age. In eastern Australia the major deposits such as the Elura, Cobar, Woodlawn and Rosebery base-metal deposits and most of the black coal deposits, are Palaeozoic in age. The black coals of the Moreton district of Queensland, north-east New South Wales and Leigh Creek, South Australia are of Mesozoic age. Deposits formed in Tertiary times include the brown coal in Victoria, the bauxites of Weipa (Queensland), Gove (Northern Territory) and the Darling Range (Western Australia) and the nickeliferous laterites at Greenvale (Queensland).

Mineral resources

Australia is self-sufficient in most minerals of economic importance (and much more than self-sufficient in some). Major minerals with known reserves adequate for domestic demand and exports include bauxite (aluminium), black coal, clays, copper, diamonds, gold, iron ore, lead, manganese, natural gas, nickel, salt, silver, tin, uranium and zinc.

A special article on the development of Australia's mineral industry is included at the end of the Chapter. For further details of principal Australian mineral deposits, and notes on principal mineral resources, *see Year Book* No. 61, pages 925–932 and the Australian Mineral Industry Quarterly and Annual Reviews.

Administration

All mineral rights in Australia are vested in the Crown except those on land which was granted before the Crown began to reserve mineral rights. In practice, these private mineral rights are not important. In the States, these rights are held by the State governments. On 1 July 1980, executive authority with respect to mining and minerals except in relation to certain prescribed substances within the meaning of the Atomic Energy Act (principally uranium) was transferred from the Commonwealth Government to the Northern Territory Government. Private mineral rights in the Australian Capital Territory are vested in the Commonwealth Government. The Commonwealth Government is able also to influence overall development and production activity in the mineral industry by virtue of its statutory powers with respect to international trade, customs and excise, taxation and loan raisings. Certain specially-formed bodies such as the Joint Coal Board and the Australian Atomic

Energy Commission have been given administrative responsibility in defined areas. The government has also established consultative mechanisms, such as the Australian Coal Consultative Council, to provide an advisory, rather than administrative, role.

Mineral exploration and development

Onshore

Each State or Territory has its own mining Acts or Ordinances and regulations governing the prospecting for and working of mineral deposits. These Acts and regulations, although similar in principle are different in detail. They all make provision for a miner's right to prospect and for small mining leases for mineral production. The principles embodied were established many years ago when mining operations were generally small scale and labour-intensive. Although amendments have been enacted to modernise the legislation, it is generally inadequate for the large-scale capital-intensive operations often involved with modern mineral development. For this reason, a large enterprise may take the course of acquiring mining titles by negotiations with the appropriate Minister for Mines and having the agreed terms and conditions embodied in an Act of the State Parliament. This method of acquisition has been used in several cases where the leasing company undertook an obligation (such as the erection of a large treatment works) in return for leases over large areas for a long period, and has become more common in recent years (e.g. iron ore in Western Australia, coal and bauxite in Queensland, bauxite in the Northern Territory). Mining legislation enacted in recent years is simpler and more suited to modern conditions.

As a result of the introduction of large-scale modern prospecting methods (particularly airborne prospecting), small prospecting areas were found to be unsuitable in some instances, and steps have been taken in the States and Territories to ensure the availability of large areas for prospecting by interested persons. Large areas may be made available by provision within the mining Acts or Ordinances for the issue of authorities to prospect over an area defined by a written agreement which also sets out provisions as to the amount of money to be spent, methods of prospecting, tenure of the agreement, etc.

The tenure of such areas is limited (usually to one or two years) and, if renewed for a further period, is only over an area selected from the larger area (usually 50 per cent) as a result of work done during the life of the initial agreement. It does not give the holder any rights over, or authority to prospect on, land already held under a mining title within the agreed area. Unless specifically stated in an agreement, the discovery of minerals, whether inside or outside an area covered by an authority to prospect, gives the discoverer no legal rights except the right to apply for a mining lease over the area in which the discovery was made. Suitable prospects are converted to mining tenements by making application for lease under the appropriate mining Act.

Offshore

Following the enactment of the *Seas and Submerged Lands Act 1973* the High Court confirmed that the Commonwealth has sovereignty over the territorial sea and sovereign rights over the resources of the whole of Australia's continental shelf. However, in the Offshore Constitutional Settlement between the Commonwealth and the States reached in June 1979, it was agreed that responsibility for mining of the seabed on the landward side of the outer limit of the 3 nautical mile territorial sea should lie with the States, while the Commonwealth should have responsibility for areas beyond.

The Minerals (Submerged Lands) Act 1981 passed by the Commonwealth Parliament in June 1981 follows the scheme of the offshore petroleum legislation amendments passed in 1980 and provides for Joint Commonwealth/State Authorities to be responsible for major matters under the legislation with the States being responsible for day-to-day administration. The Commonwealth is working with the States to expedite the implementation of the Minerals (Submerged Lands) Act by all governments. The Commonwealth is also taking steps to proclaim as much of its Act as is necessary for exploration to proceed, under the planned joint arrangements. In the meantime administration of offshore mining is carried out under the States' onshore mining legislation on an interim basis.

The mining code under the new legislation provides for a two-stage system of titles: the exploration permit, which covers all forms of exploration, and the production licence, which covers development.

Petroleum exploration and development

Onshore

In Australia full control of petroleum mining rights is vested in the government or administration of each State or Territory. Any company, organisation or individual proposing to undertake petroleum exploration or development must first satisfy the government concerned that the necessary financial and technological resources are available to carry out the operation.

There are three main types of petroleum title:

- (i) the exploration title, where the holders are typically given exclusive rights over the area to conduct petroleum exploration, including the drilling and testing of wells;
- (ii) the production title, which is required for commercial production of petroleum and gives the holder the right to produce and sell the petroleum subject to the payment of a royalty calculated as a fixed percentage of the well-head value of the petroleum produced; and
- (iii) the retention licence enacted in the Northern Territory, covering onshore petroleum exploration and production under the *Petroleum Act 1984* and is intended to allow tenure over currently non-commercial discoveries.

Royalty arrangements vary from State to State. All States and the Northern Territory determine royalties derived from onshore production as a percentage of the derived well-head value of all petroleum production.

The Commonwealth has passed legislation that provides for the replacement of all Commonwealth excise on liquefied petroleum gas and crude oil, and State ad valorem royalty, with a resource rent royalty where the relevant State government has negotiated an acceptable agreement with the producers and has agreed upon a satisfactory revenue sharing formula with the Commonwealth.

Offshore

As part of the Offshore Constitutional Settlement between the Commonwealth and the States, responsibility for administering petroleum exploration and production within the outer boundary of the three nautical mile territorial sea rests with the relevant State or Territory while the Commonwealth has responsibility for the continental shelf beyond the territorial sea. The *Petroleum (Submerged Lands) Act 1967* provides for a Joint Authority for the adjacent area of each State and the Northern Territory (beyond the territorial sea limit) consisting of the Commonwealth Minister and the State/Territory Minister. The Joint Authorities are concerned with major matters arising under the legislation and in the case of disagreement the view of the Commonwealth Minister prevails. Day-to-day administration is the responsibility of the State of Territory Minister as the Designated Authority and State or Territory officials.

The mining code applicable under the legislation provides for a three stage system of titles: the exploration permit, which covers all forms of exploration including drilling, the retention lease which provides tenure over currently non-commercial discoveries and the production licence, which covers development and production.

Availability of exploration acreage

As part of the government's aim to encourage petroleum exploration, regular releases of offshore exploration acreage are made.

Mineral royalties

The collection by governments of royalties for the production of minerals within their area of authority is an internationally-accepted practice. In Australia, the responsibility for mineral royalties is largely a State concern, and all States currently collect some form of mineral royalty payments.

In recent years there has been an important basic change in the system of establishing royalty commitments, and it is now quite common for State governments to negotiate special royalty rates with companies which are seeking mineral leases for large scale developments. These royalty rates may vary, depending on whether production is for export or for domestic processing. The rates for a particular mineral may also vary between producers. Important examples of this type of royalty agreement are the iron ore development agreements in Western Australia and coal development agreements in Queensland. Mineral royalties received by governments in recent years are shown in the following table.

MINERAL ROYALTY RECEIPTS: GOVERNMENTS
($'000)

	1980–81	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*
New South Wales (*a*)	116,682	88,186	105,403	111,100	109,558	119,315
Victoria (*b*) (*c*)	118,611	108,782	124,861	180,585	206,086	213,292
Queensland (*a*)	73,274	81,421	89,766	107,645	142,614	196,413
South Australia	7,312	8,811	9,321	14,172	27,739	58,352
Western Australia	78,341	81,330	102,454	168,477	131,640	162,208
Tasmania	3,557	2,209	2,082	2,137	1,043	1,507
Northern Territory (*d*)	5,666	3,020	2,934	3,963	5,483	8,079
Commonwealth Government (*c*)	57,319	56,580	73,333	89,853	101,129	173,258
Total	**460,762**	**430,339**	**510,154**	**677,932**	**725,292**	**932,424**

(*a*) Includes royalties on sand and gravel from Crown lands. (*b*) Includes royalties on brown coal paid by State Electricity Commission. (*c*) Includes royalties received under the *Petroleum (Submerged Lands) (Royalty) Act 1967–68*. (*d*) Excludes the mining royalties paid into Aboriginal Benefits trust fund prior to 1978–79.

Joint Coal Board

The Joint Coal Board was established in 1946 under joint legislation of the Commonwealth Government and of the State of New South Wales to carry out special administrative functions in regard to the New South Wales black coal mining industry. In summary, the Board's functions are to:

- ensure that coal is produced in the State of New South Wales in such quantities and with such regularity as will meet requirements throughout Australia and in trade with other countries;
- ensure that the coal resources of the State are conserved, developed, worked and used to the best advantage in the public interest;
- ensure that coal produced in the State is distributed and used in such manner, quantities, classes and grades, and at such prices as are calculated best to serve the public interest and secure the economical use of coal and the maintenance of essential services and industrial activities;
- promote the welfare of workers engaged in the coal industry in the State.

Government assistance

The Commonwealth Government and the various State governments provide assistance to the mineral industry in a variety of ways. The main forms of assistance are discussed on the following pages.

Commonwealth Government assistance

Assistance provided by the Commonwealth Government takes the form of income taxation concessions, subsidies, bounties, and technical assistance, mainly through the work of the Bureau of Mineral Resources, Geology and Geophysics (BMR) and the Commonwealth Scientific and Industrial Research Organisation (CSIRO) as well as through the National Energy Research, Development and Demonstration Program.

Income taxation concessions as at 30 June 1987

Income derived from mining principally for gold in Australia is exempt from tax. The exemption is also available in respect of income derived from mining principally for gold and copper if the value of the gold obtained is not less than 40 per cent of the value of the total output (excluding the value of pyrites).

Special deductions for capital expenditure incurred in prospecting and mining for petroleum (including natural gas) are allowable to a petroleum mining enterprise engaged in these operations in Australia. Capital expenditure allowable to petroleum mining enterprises includes, broadly, the amount of successful cash bids and the costs of exploratory surveys, drilling and well-head plant; plant for the liquefaction of natural gas; access roads; and housing and welfare. The enterprise is entitled to these special deductions against income from any source although in the case of cash bids, the deduction only becomes available if a production licence is granted. While the special deductions for prospecting expenditure are deductible immediately against the net income of the enterprise, the deductions for capital expenditure on mining are allowable over the life of the oil or gas field or over ten years, whichever is the lesser, on a straight line basis.

An enterprise mining or prospecting for minerals other than petroleum and gold may also be allowed special deductions for capital expenditure. Broadly, allowable capital expenditure includes expenditure on exploration and prospecting; preparation of a site for extractive mining operations; buildings; other improvements and plant necessary for those operations; access roads; certain treatment plant; and housing and welfare.

The allowable capital expenditure of a general mining enterprise, other than costs of exploration, may be deducted against income from any source over the life of the mine or over ten years, whichever is the lesser, on a straight line basis. Expenditure incurred by a general mining enterprise in exploring for minerals is deductible immediately against the net income of the enterprise from any source. Undeducted exploration and development expenditure of general mining and petroleum companies may be carried forward indefinitely, although in respect of such expenditure actually incurred in 1985–86 and subsequent financial years the companies may elect to have such undeducted expenditure treated as carry-forward losses transferable to another company in the same group.

Annual deductions for depreciation on petroleum mining plant or general mining plant may be allowed in lieu of spreading the cost over the life of the oil field or mine. The cost of exploration plant may also be deducted under the depreciation provisions of the law. The investment allowance scheme may permit a deduction at the rate of 18 per cent of the cost of certain new plant, provided it was contracted for (or construction commenced) before 1 July 1985.

Special deductions are allowable for capital expenditure incurred on certain transport facilities for use in Australia primarily and principally, for the transport of raw minerals (other than petroleum or gold) and certain specified products obtained from the processing of such minerals, or for transporting petroleum between the oil or gas field and a refinery or other terminal. The special deductions apply to expenditure incurred on a railway, road, pipeline or similar transport facility and on certain port facilities or other facilities for ships. Allowable expenditure on transport facilities is deductible in equal annual instalments over a period of ten or twenty years at the option of the mining enterprise.

Payments to producers of phosphate fertilizers.

The *Phosphate Fertilizers Subsidy Act 1986* provides for a subsidy to be paid on phosphatic substances produced in Australia and sold in Australia for use as a fertilizer. The subsidy varies according to the percentage of available phosphorous content of the fertilizer. When this is below 10 per cent, the subsidy is $153 for each tonne of available phosphorous content. When the percentage available is 10 per cent or more but less than 15 percent, the subsidy is $163 for each tonne of available phosphorous content of the fertilizer. In any other case the subsidy is $188 for each tonne of available phosphorous.

Payments to producers of nitrogenous fertilizers

The *Nitrogenous Fertilizers Subsidy Act 1986* provides for a subsidy to be paid on inorganic nitrogenous substances produced in Australia and sold for use in Australia as a fertilizer. Subsidy is payable at the rate of $20 per tonne of the nitrogen content of which the substance consists.

Bureau of Mineral Resources, Geology and Geophysics—BMR

The role of BMR is to:

- develop an integrated, comprehensive, scientific understanding of the geology of the Australian continent, the Australian offshore area and the Australian Antarctic Territory, as a basis for minerals exploration; this to be done where appropriate in co-operation with State Geological Surveys and other relevant organisations and having regard to priorities for the search for minerals approved by the Minister for Primary Industries and Energy;
- be the primary national source of geoscience data and to publish and provide information;
- undertake mineral resource assessments in accordance with programs and priorities approved by the Minister for Primary Industries and Energy with the advice of the BMR.

At 31 August 1987, BMR had a full-time staff of approximately 565 people, including 245 research and other scientists, (geologists, geophysicists, chemists, engineers, and mineral economists etc.), 215 technical and cartographic and around 105 clerical and other support staff.

BMR's research program is carried out by four Divisions—Geophysics, Continental Geology, Marine Geosciences and Petroleum Geology, and Petrology and Geochemistry. Mineral and petroleum resource assessments are undertaken by the Resource Assessment Division which includes Mineral Commodities Branch, a Petroleum Branch, a Mineral Product Evaluation Branch, and a Geoscience Computing and Database Branch. Other branches are Planning and Programs, and Special Projects and Geoscience Services.

BMR maintains laboratories in Canberra engaged on geochemical, geochronological, organic geochemistry, and petroleum technological studies, and basic research into the design and testing of geophysical equipment. It also maintains geophysical observatories at Kowen Forest (Australian Capital Territory), Mundaring (Western Australia), Mawson (Antarctica), and Macquarie Island. The geophysical observatories are engaged in geomagnetic, ionospheric, and seismology research.

State government assistance

In addition to free assays and determinations of rocks and minerals carried out for prospectors by the Mines Departments of the States and Territories, technical officers of these departments provide advice to the mining and allied industries where required, carry out field examinations of mining prospects, advise on exploration and development, select sites for water supply, and generally give a free technical service to the mining industry.

New South Wales

The primary objective of the Department of Mineral Resources is to promote the responsible development of mineral resources in New South Wales. The Department administers the various Acts (Coal, Petroleum and Mining) and grants titles to encourage and facilitate the exploration for, prospecting and development of, the State's mineral resources. The Department's staff is deployed in many diverse areas of activity to encourage and assist mining and resource development projects by the mining industry.

A wide range of services, information and advice is provided on many subjects including geological and geophysical investigations, scientific and chemical research, geological and metallogenic mapping, prospecting, mining legislation and administrative procedures. The Geological and Mining Museum, one of the State's foremost specialist museums, is maintained by the Department, as is the reference library of geology, mining and allied topics situated at the Department's head office and Bore Core Library situated at Londonderry, near Penrith.

The Department is engaged in the continuous assessment of the State's mineral resources; its coal exploration and assessment programme in particular has identified many significant coal deposits.

Victoria

The Department of Industry, Technology and Resources advises on, monitors, co-ordinates and implements minerals and energy policy. The Department conducts geological, groundwater and mineral surveys, produces geological maps, and issues scientific and technical reports thereon. Drilling operations are carried out and the results are used in sedimentary basin studies to evaluate the petroleum, mineral and groundwater potential of the State. A comprehensive library is maintained, while a core library retains cores and cuttings from government and private drilling operations. The administration of petroleum, pipeline, mining and extractive industry legislation ensures that mineral, stone and petroleum exploration and production (both onshore and offshore), mining and quarrying are regulated and controlled. Technical assistance and advice are available for mineral, stone, groundwater and petroleum exploration and prospecting. Five stamp batteries located throughout the State provide an ore-crushing service to enable test crushing to be made at nominal cost. Information is available on mining law and mineral statistics. Assays of ores and analytical services are also available from the State Chemical Laboratory for a fee.

Queensland

The Queensland Department of Mines encourages, assists and regulates the search for and development of mineral and energy resources, working through a system of permits, leases and licences issued under Acts of Parliament. Advice on these and associated matters is provided through the Honourable the Minister for Mines and Energy to the government. The Department also provides services and advice to government on a variety of geological, economic and safety matters.

Staff includes qualified and experienced professionals including mining and petroleum engineers, geologists, geophysicists, technical experts in the mechanical and electrical fields, surveyors, ecologists, cartographers, fuel technologists, economists, computer scientists, journalists and administrators.

Detailed information of assistance to mineral searchers is collated from in-house geological and geophysical studies and continuous scientific appraisal of results achieved and reported by private sector exploration groups. The information effort is underpinned by a program of geological mapping and by Departmental drilling for stratigraphic information, resource assessment and research purposes; a core library provides a storage and retrieval system for cores, cuttings, and geological data.

The Department carries out regular inspections to ensure mine safety and provides an expert technical advisory service to mining organisations. It also undertakes research on mine safety and health. Other responsibilities include the administration of legislation on the safe utilisation and handling of various gases and legislation providing comprehensive controls over explosives and other hazardous substances.

Thus the Department carries the responsibility for State government supervision to ensure that natural resources are assessed, developed and put to work safely and effectively.

South Australia

The role of the Department of Mines and Energy is to:

- provide an information service and advice to the government, government agencies, private industry and general public on exploration, development and processing of the State's mineral, energy and underground water resources;
- ensure that the State's mineral, energy and underground water resources are assessed and developed in accordance with government policy;
- encourage private sector exploration for mineral and energy resources in the State;
- provide advice to government on overall energy development, utilisation and conservation, including alternative energy sources;
- ensure that industries engaged in exploring, extracting and processing mineral and energy resources adopt effective safety precautions within their operations;
- ensure that the government's policies on environmental protection measures are adopted by organisations engaged in exploration and development of the State's mineral, energy and underground water resources;
- provide geoscientific research and specialist services as part of an ongoing process of acquiring and updating geological and geophysical data throughout the State for the benefit of the mining industry, other government departments and the community.

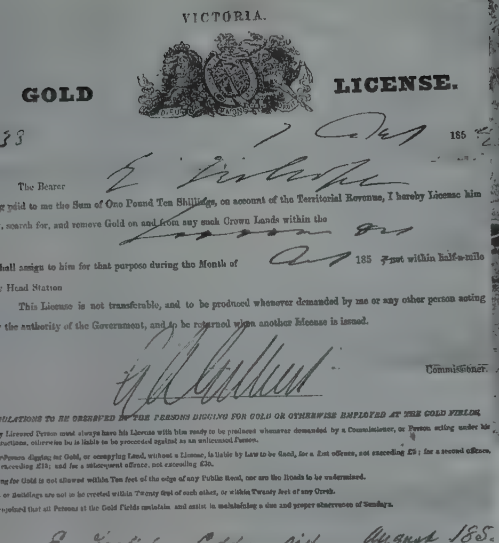
Western Australia

The Western Australian Department of Mines carries out the registration of mining tenement titles, the survey of tenements and the subsequent collection of mining royalties. Through its Geological Survey Division, the Mines Department carries out geological investigations and surveys throughout the State. The results of this work are made available in both map and report format. The Government Chemical Laboratories Division of the Mines Department provides analytical and research services to government, industry and the public. In addition the Department administers legislation relating to the use and transport of explosives and dangerous goods and the safety of workers in the mining and petroleum industries.

Tasmania

The Department of Mines assists industry in maintaining and increasing the value to the State of its mineral and petroleum resources. Companies are required to extract resources in the most complete manner and to minimise environmental impact. The Department is the State's centre for earth sciences and mineral resources. Mineral resource maps, geological maps, mineral exploration data bases and geophysical information are available.

MINERAL INDUSTRY



VICTORIA.

GOLD **LICENSE.**

33 7 Aug 185 3

The Bearer E [illegible]

g paid to me the Sum of One Pound Ten Shillings, on account of the Territorial Revenue, I hereby License him

, search for, and remove Gold on and from any such Crown Lands within the

[illegible]

hall assign to him for that purpose during the Month of Aug 185 3 not within half-a-mile

: Head Station

This License is not transferable, and to be produced whenever demanded by me or any other person acting

the authority of the Government, and to be returned when another License is issued.

Commissioner.

ULATIONS TO BE OBSERVED BY THE PERSONS DIGGING FOR GOLD OR OTHERWISE EMPLOYED AT THE GOLD FIELDS.

y Licensed Person must always have his License with him ready to be produced whenever demanded by a Commissioner, or Person acting under his tructions, otherwise he is liable to be proceeded against as an unlicensed Person.

Person digging for Gold, or occupying Land, without a License, is liable by Law to be fined, for a first offence, not exceeding £5; for a second offence, exceeding £15; and for a subsequent offence, not exceeding £30.

ng for Gold is not allowed within Ten feet of the edge of any Public Road, nor are the Roads to be undermined.

. or Buildings are not to be erected within Twenty feet of each other, or within Twenty feet of any Creek.

joined that all Persons at the Gold Fields maintain and assist in maintaining a due and proper observance of Sundays.

E. Trot[illegible]. Loddon dist. August 185.

Gold diggers licence, Victoria, 1853.

Nineteenth century gold prospectors.

A gold pour at Kalgoorlie.

Mt Charlotte mine, Kalgoorlie, Western Australia.

Photographs—Promotion Australia.

Separation plant near Dampier, Western Australia where light crude oil is separated from natural gas.

North Rankin natural gas field on the North West Shelf, 130 km off the NW coast of Australia.

Oil exploration, Roma, Queensland.

Mount Tom Price is one of several large, high-grade deposits of haematite in the Hammersley Range area in the north-west of Western Australia, about 595 kilometres by road north of Perth. Iron ore from the huge open-cut mine is conveyed by rail 293 kilometres to the deepsea port at Dampier.

Photographs—Promotion Australia

Blasting at Mount Tom Price.

Stockpiles of iron ore.

re being railed to Dampier.

Working the coal face, Newlands, Queensland.

Stock piles of coal at Hay Point, Queensland.

Photographs—Promotion Australia.

Bauxite mine, Gove, Northern Territory.

The following services are provided:

- geological and mining engineering advice;
- engineering geology and groundwater services;
- chemical and metallurgical laboratories;
- drill and plant hire;
- ore dressing research into metallurgical recoveries;
- selection and design of treatment plants.

Financial assistance is extended to approved mining lessees.

Northern Territory

The Department of Mines and Energy encourages and assists the development of an efficient mining and processing industry throughout the Northern Territory. Through five divisions the Department administers relevant legislation and provides a wide range of services.

Mines Division acts as a single point of contact for all mineral mining related matters in the Northern Territory. In this context it is also responsible for controlling and ensuring the efficient, orderly and safe exploration for, and recovery and utilisation of mineral resources in the Northern Territory. The Division formulates and implements policy and legislation designed to investigate the feasibility of mining and development proposals, provides technical advice to prospecting and mining operations, and strives for compatibility between mining and alternate land uses. It also administers all mineral titles and is responsible for the collection of mineral royalties.

The Geological Survey Division provides the essential scientific basis for the overall operations of the Department of Mines and Energy. The Division studies the regional geology and geophysics of the Northern Territory and publishes reports of this work for use by industry, other government departments and the public.

Energy Division is responsible for the development and implementation of energy policies, research into alternative sources of energy, planning of energy supply and consumption in the Northern Territory and for safety and environmental supervision of petroleum exploration. This includes promotion of the exploration for and development of indigenous energy resources, research into diversification of the Northern Territory's energy base, energy conservation and security.

Alligator Rivers Region is responsible for the oversight and coordination of all stages of uranium mining, milling and rehabilitation processes in the Alligator Rivers Region. The unit is the focal point for the industry and the public for matters concerning uranium mines in the Northern Territory.

Administration ensures effective administration of the Department's functions and responsibilities and provides a range of common services to operational divisions.

Research

Research investigations into problems of exploration, mining, ore-dressing and metallurgy are conducted by government bodies, universities, private enterprise, or by the combined efforts of all these. A summary of their functions follows, for further information on research *see* Chapter 22, Science and Technology.

The Australian Mineral Development Laboratories

Analysis, contract research and consulting in a broad range of scientific and technical areas is carried out by Amdel Limited. Operations are based in Adelaide, with branches in Perth, Melbourne, Sydney, Canberra, Darwin and Townsville. Extensive laboratory facilities are available in the fields of analytical chemistry, mineralogy, materials science and petroleum. Mineral processing testing is carried out at bench and laboratory scale. Services are provided in fields of pollution and environmental control and occupational health and safety. Products are based around nucleonic measurement techniques linked to microprocessors, and include in-stream analysis for the mineral industry, coal slurry analyser, limestone analyser and on-pipe density gauge.

Bureau of Mineral Resources, Geology and Geophysics—BMR

BMR is one of the largest geoscience research organisations in Australia. Its role is to develop an integrated scientific understanding of the geology of the Australian continent, its Territories and offshore areas, as a basis for mineral exploration and resource assessment.

BMR carries out programs in:

- Fossil fuels and minerals research: with components covering Controls on Fossil Fuels Occurrence; Onshore Sedimentary Basins; Offshore Sedimentary Basins; Overseas Basins; Mineral Deposits and Provinces; Regolith, Related Resources and Remote Sensing; Regional Structure and Tectonics; and Geophysical Mapping (Continental and Offshore).
- Groundwater research and assessment: comprising a component on Basin Hydrogeology.
- National geophysical observatories and Antarctic surveys: involving components on Earthquake and Volcanic Hazards; Monitoring of Nuclear Explosions; Geomagnestism; Antarctic Onshore Surveys; and Antarctic Offshore Basins.
- Petroleum and minerals resource assessment: covering components on Petroleum Resource Assessment and Availability; and Mineral Resource Assessment and Availability.
- National geoscience databases: including components on Databases Co-ordination, Research and Operations; and Geoscience Maps, Cartography and Image Processing.
- BMR management and information: with components on Geoscience Management, Coordination and Public Relations; Publications; Geoscience Library and Museum; Resources Management and Services; and International Agreements and Project Coordination.

Commonwealth Scientific and Industrial Research Organisation

Minerals research by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) is undertaken within the Institute of Energy and Earth Resources. The research has the objectives of improving methods of locating, evaluating, defining and characterising Australia's mineral resources and of planning their recovery, development and effective use consistent with the minimisation of environmental stresses. Divisions of the Institute engaged in minerals research are the Division of Geomechanics at Syndal (Vic.); the Division of Fossil Fuels at North Ryde (N.S.W.); the Division of Mineral Chemistry at Port Melbourne (Vic.); the Division of Mineral Engineering at Clayton (Vic.); the Division of Minerals and Geochemistry at Perth (W.A.), the Division of Mineral Physics and Mineralogy at North Ryde (N.S.W.), and the Division of Energy Chemistry at Lucas Heights (N.S.W.). The Institute Headquarters is located in Canberra (A.C.T.).

University research

The various universities in Australia carry out research into various aspects of the mineral industry such as geology, ore mineralogy and genesis, mining techniques, mineral processing, extractive metallurgy, and materials and metals technology.

Research by private enterprise

The Australian Mineral Industries Research Association Limited (AMIRA) is a non-profit organisation which was set up in 1959 by the Australian mineral industry to manage jointly sponsored research and development on behalf of the industry. There are more than 100 members of AMIRA, drawn from all parts of the mineral, coal and petroleum industries. Membership ranges from small exploration companies to large mining houses and includes suppliers of services to the industry. The policy of the Association is determined by a council elected by members.

AMIRA has no research facilities so organisations such as CSIRO, universities, consultants, suppliers or member companies carry out the research as contractors to AMIRA. Research contracts worth approximately $13 million are being handled by AMIRA.

International relations

Because Australia is a large supplier of certain minerals to the rest of the world, and because the welfare of the domestic industry depends to a large extent on the maintenance of a high level of exports, international relations are of considerable importance to the industry, and the Commonwealth Government takes an active role in international consultations and discussions relating to minerals. The most important international commitments are discussed below.

International Tin Agreement

The First International Tin Agreement (of the post-war period) was in operation for five years from 1 July 1956 to 30 June 1961. It was followed by the Second, Third, Fourth, Fifth and Sixth International Tin Agreements, which came into force on 21 February 1962, 21 March 1967, 1 July 1971, 1976 and 1982 respectively. Australia joined the Fourth, Fifth and Sixth Agreements as a 'producing' (i.e. exporting) member, whereas in the first three agreements Australia's status had been that of a 'consuming' (i.e. importing) member. Details of the Second and Third Agreements are given in *Year Book* No. 57, pages 911–12. Details of the Fourth Agreement are given in *Year Book* No. 61, page 942, and those of the Fifth in *Year Book* No. 66, page 376.

Prior to the expiry date of the present (Sixth) Agreement on 30 June 1987, member countries agreed to extend the Agreement for two years from 1 July 1987 to 30 June 1989. During this period of extension, the economic provisions of the Agreement will remain suspended following the cessation of buffer stock operations by the International Tin Council on 24 October 1985.

The Sixth International Tin Agreement is administered by the International Tin Council, which is made up of the following governments: *Producers*—Australia, Indonesia, Malaysia, Nigeria, Thailand, Zaire; *Consumers*—Belgium-Luxembourg, Canada, Denmark, Finland, France, Germany (Federal Republic of), Greece, India, Ireland (Republic of), Italy, Japan, Netherlands, Norway, Poland, Sweden, Switzerland, and the United Kingdom. The producing countries hold a total of 1,000 votes, distributed so that each country receives five initial votes and an additional number corresponding to its percentage as laid down by the Agreement. The consuming countries hold a total of 1,000 votes also distributed so that each country receives five initial votes and an additional number proportionate to quantities consumed. The allocation of votes in each category is periodically reviewed.

Association of Tin Producing Countries—ATPC

The ATPC came into force on 16 August 1983. Membership is open to countries which are net exporters of tin. The current members are Australia, Bolivia, Indonesia, Malaysia, Nigeria, Thailand, Zaire. The main objective of the ATPC is to encourage greater consumption of tin through research, development and promotion.

International Lead-Zinc Study Group

With the cessation of stockpile buying of lead and zinc by the United States Government in 1958, world producers were faced with the prospect of a serious imbalance between world supply and demand for these metals. To meet this problem, a series of meetings of interested governments were held at which Australia was represented. These meetings culminated in the formation of the International Lead-Zinc Study Group which was established in January 1960. The Study Group comprises the following governments: Algeria, Argentina, Australia, Austria, Belgium, Bulgaria, Canada, Czechoslovakia, Denmark, Finland, France, Germany (Federal Republic of), Hungary, India, Iran, Ireland (Republic of), Italy, Japan, Mexico, Morocco, Netherlands, Norway, Peru, Poland, South Africa (Republic of), Spain, Sweden, Tunisia, Union of Soviet Socialist Republics, United Kingdom of Great Britain and Northern Ireland, United States of America, Yugoslavia and Zambia. The Group provides opportunities for inter-governmental consultations on international trade in lead and zinc and for studies of the world situation in lead and zinc.

Association of Iron Ore Exporting Countries—APEF

Australia is a founder member of the APEF whose members account for about 44 per cent of world iron ore exports. Other members are Algeria, India, Liberia, Mauritania, Peru, Sierra Leone, Sweden and Venezuela.

The Association was formed in 1975 with a Secretariat located in Geneva, Switzerland. The Agreement establishing the Association provides for a Conference of Ministers, which meets once every two years. A Board, comprising representatives of each member country meets twice a year.

The objectives of the Association are to promote close co-operation among member countries with a view to safeguarding their interests in relation to the iron ore export industry.

The Association provides a forum for consultations and exchange of information on problems relating to the iron ore export industry.

The Association's Secretariat publishes a statistical bulletin twice a year as well as occasional papers on the iron ore industries of major producing countries.

Inter-governmental Council of Copper Exporting Countries—CIPEC

The CIPEC was established in 1967 by the Governments of Chile, Peru, Zaire and Zambia as an inter-governmental consultative organisation.

Australia and Papua New Guinea were admitted as Associate Members and Indonesia as a Full Member in 1975, the latter changing to Associate Membership from 1 January 1986. Yugoslavia was admitted as an Associate Member in 1977. Associate Members may participate in meetings but have no voting rights and are not bound by CIPEC's decisions.

The key objectives of CIPEC are to co-ordinate measures to achieve continuous growth in real earnings from copper exports and to harmonise the decisions and policies of members relating to copper production and marketing.

International Bauxite Association—IBA

Australia joined the IBA as a founder member in October 1974. Other members are Ghana, Guinea, Guyana, India, Indonesia, Jamaica, Sierra Leone, Surinam and Yugoslavia. Members account for about three-quarters of world bauxite production, with Australia accounting for over one third of world production.

The objectives of the Association are to promote the orderly and rational development of the bauxite industry; to secure for members fair and reasonable returns from the exploitation, processing and marketing of bauxite and its products for the economic and social development of their peoples, bearing in mind the recognised interests of consumers; and generally to safeguard the interests of member countries in relation to the bauxite industry.

The Association consists of a Council of Ministers which meets once a year, an Executive Board consisting of senior officials which meets three times a year and a Secretariat which is located in Kingston, Jamaica.

The IBA provides members with an opportunity to discuss common problems and evolve co-operative policies to facilitate further development of their bauxite/alumina/aluminium industries. The Association's work is mostly concerned with exchanging views and information on a range of industry matters. The commercial and technical aspects of formulating minimum export prices for bauxite and alumina have received particular attention. In November 1986 the Council adopted recommendations on minimum CIF prices for bauxite and alumina sold by member countries in 1987. Australia was not included in the majority that voted for the recommendations and is not bound by them. The Association publishes a quarterly review.

Mining industry statistics

This section contains statistics of the mining industry in Australia, obtained from the annual census of mining establishments. The annual mining census is conducted throughout Australia on an integrated basis with other economic censuses, e.g. the annual census of manufacturing establishments, electricity and gas establishments and the periodic censuses of retail, wholesale trade, construction, transport and selected services establishments.

Statistics are also available for *enterprises* engaged in the mining industry. The latest statistics for mining are in respect of 1984–85 and were published in the *Enterprise Statistics: Details by Industry Sub-division, Australia* (8107.0). Enterprise statistics for mining are now produced annually and should be available within two years of the end of the financial year to which they relate. A description of the statistics and broad summary tables, in respect of the 1983–84 and 1984–85 censuses and surveys are given in Chapter 18.

The following table shows key items of data for establishments in Australia for 1985–86 based on the 1978 edition of the *Australian Standard Industrial Classification* (ASIC).

MINING ESTABLISHMENTS: SUMMARY OF OPERATIONS BY INDUSTRY CLASS, 1985–86

Industry									
ASIC code	*Description*	*Establishments at 30 June*	*Average employment over whole year(a)*	*Wages and salaries (b)*	*Turnover*	*Stocks*		*Total purchases transfers in and selected expenses*	*Value added*
						Opening	*Closing*		
		no.	no.	$m	$m	$m	$m	$m	$m
	Metallic minerals—								
	Ferrous metal ores—								
1111	Iron ores	18	8,167	260.4	2,423.8	125.4	117.2	1,028.8	1,386.8
1112	Iron ore pelletising	2							
	Non-ferrous metal ores—								
1121	Bauxite	8	2,092	66.1	515.3	27.2	31.2	112.6	406.7
1122	Copper ores	7	2,755	88.5	334.6	60.1	54.8	128.9	200.4
1123	Gold ores	137	4,999	145.0	942.3	85.7	104.8	373.7	587.7
1124	Mineral sands	15	1,529	37.9	259.1	35.6	40.8	117.7	146.7
1125	Nickel ores	5	2,411	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
1126	Silver-lead-zinc ores	14	6,455	200.9	719.9	139.5	127.3	346.4	361.3
1127	Tin ores	58	1,098	23.3	96.2	38.3	36.6	48.7	45.8
1128	Uranium ores	2	512	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
1129	Non-ferrous metal ores n.e.c.	7	814	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
11	*Total metallic minerals*	*273*	*30,832*	*937.6*	*6,002.2*	*696.3*	*728.4*	*2,402.3*	*3,632.0*
	Coal, oil and gas—								
1201	Black coal	127	32,111	1,180.4	7,071.8	660.3	752.7	3,241.1	3,923.1
1202	Brown coal	6	2,446	70.5	262.7	14.3	12.8	52.6	208.6
1300	Oil and gas	31	4,698	188.4	4,961.1	163.9	178.9	501.9	4,474.2
12,13	*Total coal, oil and gas*	*164*	*39,255*	*1,439.3*	*12,295.7*	*838.5*	*944.4*	*3,795.7*	*8,605.9*
	Construction materials—								
1401	Sand and gravel	360	1,940	40.7	313.3	15.3	15.5	148.0	165.5
1404	Construction materials n.e.c.	465	4,148	96.0	640.0	47.8	56.6	307.5	341.4
14	*Total construction materials*	*825*	*6,088*	*136.7*	*953.3*	*63.1*	*72.2*	*455.5*	*506.8*
	Other non-metallic minerals—								
1501	Limestone	54	725	15.5	74.0	7.4	5.8	38.9	33.5
1502	Clays	92	229	4.5	34.6	3.9	4.0	20.6	14.1
1504	Salt	15	586	18.1	105.8	20.2	22.0	35.3	72.3
1505	Non-metallic minerals n.e.c.	105	1,254	21.0	152.4	26.9	41.5	75.9	91.2
15	*Total other non-metallic minerals*	*266*	*2,794*	*59.0*	*366.9*	*58.4*	*73.3*	*170.7*	*211.1*
	Total mining (excl. services to mining)	**1,528**	**78,969**	**2,572.6**	**19,618.1**	**1,656.3**	**1,818.2**	**6,824.2**	**12,955.8**

(*a*) Includes working proprietors (*b*) Excludes amounts drawn by working proprietors.

Mineral production

This section contains details of the output (quantity and value) of selected minerals produced and the metallic content of ores, concentrates, etc.

The statistics shown have been derived from data collected in the annual mining census and in returns to the various State Mines Departments, supplemented in some cases by information made available by the Department of Primary Industries and Energy and from other sources.

For details of the scope of mineral production statistics and their relation to mining industry statistics, and the principles for measuring the output of minerals, *see Year Book* No. 61 and earlier issues.

Quantity of minerals produced

The following tables show particulars of the quantities of selected minerals produced and contents of selected metallic minerals produced during 1985–86 and earlier years. Further data are available relative to all minerals in the annual publication *Mineral Production, Australia* (8405.0).

QUANTITY OF SELECTED MINERALS PRODUCED

Mineral		*1983–84*	*1984–85*	*1985–86*
METALLIC MINERALS				
Bauxite	'000 tonnes	n.p.	n.p.	31,864
Copper concentrate	"	n.p.	n.p.	n.p.
Copper ore	"	40,371	28,737	19,739
Gold bullion (*a*)	kg	n.p.	n.p.	81,008
Iron ore	'000 tonnes	76,478	n.p.	n.p.
Lead concentrate	"	n.p.	764	n.p.
Lead-copper concentrate	tonnes	20,835	28,200	38,209
Lead-zinc concentrate	"	37,932	46,276	55,534
Manganese ore—				
Metallurgical grade	'000 tonnes	n.p.	n.p.	1,152
Mineral sands—				
Ilmenite concentrate (*b*)	"	1,017	1,264	1,272
Rutile concentrate	"	163	191	n.p.
Zircon concentrate	"	412	452	476
Nickel concentrate	"	506	486	455
Tantalite-columbite concentrate	tonnes	92	185	n.p.
Tin concentrate	"	16,448	13,321	n.p.
Tungsten concentrates—				
Scheelite concentrate	"	1,801	2,045	2,029
Wolfram concentrate	"	1,499	1,427	1,194
Uranium concentrate	"	n.p.	n.p.	n.p.
Zinc concentrate	'000 tonnes	1,147	1,311	n.p.
COAL				
Coal (other than lignite)—				
Saleable coal(*c*)				
Semi-anthracite	'000 tonnes	n.a.	231	358
Bituminous	"		105,859	120,398
Sub-bituminous	"		12,177	13,599
Washery rejects(*c*)	"		26,906	29,314
Lignite—				
For briquettes	"	1,900	2,131	2,157
Other	"	31,345	36,369	33,312
Briquettes	"	760	802	851
OIL AND GAS				
Crude oil (stabilised)	megalitres	26,826	30,919	26,826
Natural gas	gigalitres	12,098	12,958	14,274
Ethane	"	175	200	196
CONSTRUCTION MATERIALS				
Sand	'000 tonnes	24,760	27,017	28,019
Gravel	"	14,612	16,951	18,677
Crushed and broken stone	"	55,407	65,573	70,061
Other (decomposed rock, dimension stone, etc.)	"	29,239	32,298	33,595
OTHER NON-METALLIC MINERALS				
Brick clay and shale	'000 tonnes	6,476	7,668	6,925
Limestone (including shell and coral)	"	10,333	11,811	n.p.
Salt	"	n.p.	n.p.	5,735
Silica	"	2,060	n.p.	n.p.

(*a*) Includes alluvial gold. (*b*) Includes ilmentite from which titanium dioxide is not commercially extractable and beneficiated ilmentite. (*c*) Raw coal is saleable coal plus washery rejects.

CONTENTS OF SELECTED METALLIC MINERALS PRODUCED

Contents of metallic minerals produced		*1983–84*	*1984–85*	*1985–86*
Antimony	tonnes	719	1,409	1,262
Cadmium	"	2,214	2,670	2,167
Cobalt	"	1,952	2,602	2,918
Copper	"	249,282	251,782	241,706
Gold	kg	33,881	48,853	64,780
Iron(*a*)	'000 tonnes	n.p.	n.p.	n.p.
Lead	tonnes	n.p.	n.p.	n.p.
Manganese	"	n.p.	n.p.	n.p.
Monazite	"	15,207	14,001	15,538
Nickel	"	75,770	82,267	80,528
Palladium	kg	506	461	421
Platinum	"	71	81	94
Silver	"	n.p.	1,044,105	1,074,227
Sulphur	tonnes	345,094	429,710	449,706
Tantalite-columbite ($Ta_2O_5+Nb_2O_5$)	kg	50,013	87,648	n.p.
Tin	tonnes	8,688	n.p.	7,391
Titanium dioxide (TiO_2)	"	758,233	858,586	1,023,561
Tungstic oxide (WO_3)	mtu(*b*)	239,236	239,883	232,253
Yttrium oxide (Y_2O_3)	kg	15,060	12,600	n.p.
Zinc	tonnes	n.p.	744,401	722,599
Zirconium dioxide (ZrO_2)	"	275,153	314,544	331,678

(*a*) Excludes iron content of iron oxide not intended for metal extraction. Includes iron contained in iron concentrate. (*b*) Metric ton unit (mtu) equals 10 kilograms.

Value of minerals produced

The following table shows the value of principal minerals produced during 1985–86 and earlier years. Further data are available in the annual publication *Mineral Production, Australia* (8405.0).

VALUE OF SELECTED MINERALS PRODUCED
($'000)

Mineral	*1983–84*	*1984–85*	*1985–86*
METALLIC MINERALS			
Bauxite	n.p.	n.p.	n.p.
Copper concentrate	275,385	305,939	341,334
Copper ore	2,242	1,411	1,130
Gold bullion(*a*)	n.p.	n.p.	944,139
Iron ore	n.p.	n.p.	n.p.
Lead concentrate	n.p.	n.p.	n.p.
Lead-copper concentrate	n.p.	n.p.	n.p.
Lead-zinc concentrate	9,786	8,038	7,786
Manganese ore—			
Metallurgical grade	n.p.	n.p.	n.p.
Mineral sands—			
Ilmenite concentrate(*b*)	32,191	45,858	57,003
Rutile concentrate	42,879	67,092	n.p.
Zircon concentrate	43,431	49,659	62,441
Nickel concentrate	n.p.	n.p.	n.p.
Tantalite-columbite concentrate	2,411	4,827	n.p.
Tin concentrate	n.p.	n.p.	89,857
Tungsten concentrates—			
Scheelite concentrate	n.p.	n.p.	n.p.
Wolfram concentrate	8,891	7,435	6,310
Uranium concentrate	n.p.	n.p.	n.p.
Zinc concentrate	278,040	341,303	269,048
COAL			
Coal (other than lignite)—			
Saleable coal—			
Semi-anthracite	6,443	5,733	10,904
Bituminous	3,320,769	3,988,421	4,770,138
Sub-bituminous	234,686	330,781	398,289
Lignite—			
For briquettes	. .	. .	. .
Other	135,736	204,758	233,912
Briquettes	18,136	23,851	15,714

VALUE OF SELECTED MINERALS PRODUCED—*continued*
($'000)

Mineral	*1983–84*	*1984–85*	*1985–86*
OIL AND GAS			
Oil and Gas	3,024,008	4,034,400	n.p.
CONSTRUCTION MATERIALS			
Sand	123,520	141,297	161,075
Gravel	98,606	110,347	109,515
Crushed and broken stone	374,348	462,087	536,271
Other (Decomposed rock, dimension stone, etc.)	91,996	90,027	114,191
OTHER NON-METALLIC MINERALS			
Brick clay and shale	21,007	27,041	27,201
Gems			
Opal(*c*)	45,987	45,079	49,950
Sapphire	9,905	13,627	12,066
Limestone (incl. shell and coral)	54,767	64,167	n.p.
Salt	n.p.	n.p.	99,194
Silica	23,466	18,269	n.p.

(*a*) Includes alluvial gold. (*b*) Includes ilmenite from which titanium dioxide is not commercially extractable and beneficiated ilmenite. (*c*) Partly estimated.

Foreign participation in the mining industry in Australia

Summary information on foreign participation in the mining industry in Australia is shown in Chapter 26, Foreign Transactions. More detailed statistics are available in *Foreign Ownership and Control of the Mining Industry, Australia 1984–85* (5317.0) and *Foreign Control in Mineral Exploration, Australia 1984–85* (5323.0).

Mineral exploration (other than for petroleum and oil shale)

Definition

Exploration consists of the search for and/or appraisal of new ore occurrences and known deposits of minerals (including extensions to deposits being worked) by geological, geophysical, geochemical and other methods (including drilling). Exploration for water is excluded. The construction of shafts and adits is included if primarily for exploration purposes. Excluded are mine development activities carried out primarily for the purpose of commencing or extending mining or quarrying operations (including the construction of drives, shafts, winzes, etc. in underground mines, and the preparation of quarrying sites, including overburden removal, for open-cut extraction).

Sources of statistics

The statistics of exploration for minerals *other than petroleum and oil shale* are derived from the annual mineral exploration census conducted by the Australian Bureau of Statistics in each State and the Northern Territory (in New South Wales the census is conducted jointly with the State Department of Mineral Resources).

Classification

The data obtained in the mineral exploration census are divided into the following categories:

(*a*) *Private exploration on production leases*—relates to exploration carried out on the production lease by privately-operated mines currently producing or under development for the production of minerals.

(*b*) *Other private exploration*—relates to exploration carried out by private enterprises on areas covered by exploration licences, authorities to enter, authorities to prospect and similar licences and authorities issued by State governments for exploration of minerals. Also included is exploration by private enterprises which is not directly connected with areas under lease, licence, etc.

(*c*) *Exploration by government*—relates to exploration of minerals carried out by Federal and State government departments, local government authorities and business undertakings operated by those departments or authorities.

Expenditure, metres drilled

The following table shows expenditure and metres drilled on private mineral exploration other than for petroleum and oil shale in Australia during the last six years.

PRIVATE MINERAL EXPLORATION (OTHER THAN FOR PETROLEUM AND OIL SHALE)

	1980–81	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*
Expenditure ($'000)—						
On drilling	126,088	141,872	89,723	93,503	96,728	101,777
Other	344,401	433,700	348,188	335,199	340,600	340,256
Australia	**470,489**	**575,572**	**437,911**	**428,702**	**437,328**	**442,033**
Metres drilled ('000)—						
Drilled-core	1,156	1,201	871	1,089	975	1,033
Drilled-non-core	2,808	2,824	1,882	2,110	2,416	2,503
Australia	**3,965**	**4,025**	**2,752**	**3,198**	**3,391**	**3,537**

Oil shale exploration

Statistics of exploration for oil shale are derived from an annual exploration census conducted by the Australian Bureau of Statistics.

In 1985–86 expenditure in Australia on private exploration for oil shale amounted to $1,780,000 with 3,000 metres being drilled.

Petroleum exploration

Source of statistics

These statistics of expenditure on petroleum exploration have been obtained by the addition of values collected in a quarterly census conducted by the Australian Bureau of Statistics. Other data shown were collected by the Bureau of Mineral Resources, Geology and Geophysics. Further information relating to petroleum exploration is published by the Australian Bureau of Statistics in its annual publication *Mineral Exploration, Australia* (8407.0) and by the Bureau of Mineral Resources, Geology and Geophysics in *The Petroleum Newsletter* (issued quarterly) and *The Australian Mineral Industry Annual Review.*

Scope

Petroleum exploration consists of the search for and/or appraisal of deposits of crude oil and/or natural gas and natural gas liquids by geological, geophysical, geochemical, and other exploration methods, including drilling. Included in the expenditure are the costs of drilling exploratory oil and/or gas wells and the testing of such wells. Also included are the costs of access roads, site construction, permits, licences and similar fees, relevant office buildings and furniture, transportation equipment, storage facilities, plant and equipment, and review work where these are undertaken primarily for purposes of exploration for deposits of petroleum. Details of developmental oil and/or gas wells are excluded.

PETROLEUM EXPLORATION

		1983–84	*1984–85*	*1985–86*
Expenditure—				
Private	$'000	823,692	803,204	765,727
Government	$'000	n.p.	n.p.	n.p.
Total	**$'000**	**n.p.**	**n.p.**	**n.p.**
Wells (*a*)—				
Drilled (i.e. those which reached final depth)—				
As oil producers	No.	43	65	24
As gas producers	No.	27	37	20
Plugged and abandoned	No.	141	168	95
Total	**No.**	**211**	**270**	**139**
Average final depth of wells drilled	m	1,976	1,904	1,964
Drilling still in progress at 31 December (uncompleted holes)	No.	14	11	6
Wells drilled or drilling over 3,000 metres	No.	39	25	17
Metres drilled (*a*)—				
Completed wells	m	390,050	493,920	267,818
Uncompleted holes	m	20,993	18,192	7,438
Total	**m**	**411,043**	**512,112**	**275,256**

(*a*) *Source*: Bureau of Mineral Resources, Geology and Geophysics. Data relates to year ended 31 December.

Mineral processing and treatment

The extraction of minerals from ore deposits, as in mining and quarrying, is only a part of mineral technology, as few minerals can be directly used in the form in which they are mined. In most cases, minerals must undergo considerable processing and treatment before utilisation.

Principal products

The following table shows particulars of the production of certain important manufactured products of mineral origin during recent years.

PRODUCTION *(a)* OF PRINCIPAL MANUFACTURED PRODUCTS OF MINERAL ORIGIN

Commodity		*1982–83*	*1983–84*	*1984–85*
METALS(*b*)				
Non-ferrous—				
Alumina	'000 tonnes	6,701	8,030	8,120
Refined aluminium	tonnes	403,917	617,921	822,315
Blister copper(*c*)	"	172,163	182,090	176,594
Refined copper	"	172,456	166,429	165,491
Lead bullion (for export)(*c*)	"	179,462	186,561	181,182
Refined lead	"	212,176	190,121	189,100
Refined zinc	"	288,250	299,738	299,386
Refined tin	"	2,898	2,937	2,824
Ferrous—				
Pig iron	'000 tonnes	4,990	5,258	5,341
Steel ingots	"	5,392	6,093	6,301
Precious—				
Refined gold(*d*)	kg	25,784	30,661	40,501
Refined silver	"	303,889	273,788	284,963
FUELS				
Coal products—				
Metallurgical coke	'000 tonnes	3,338	3,181	3,266
Brown coal briquettes	"	760	760	802
Petroleum products—				
Diesel-automotive oil	'000 tonnes	6,540	6,405	6,807
Industrial fuel and marine fuel	"	721	649	n.p.
Fuel oil for burning	"	2,810	3,136	2,588
Automotive petrol	mil. litres	14,845	14,427	14,965
BUILDING MATERIALS				
Clay bricks	millions	1,694	1,771	1,982
Portland cement	'000 tonnes	5,350	5,072	5,680
Plaster of paris	"	n.p.	n.p.	n.p.
Plaster sheets	'000 sq m	51,229	60,313	69,207
CHEMICALS				
Sulphuric acid	'000 tonnes	1,734	1,706	1,783
Caustic soda	tonnes	n.p.	n.p.	n.p.
Superphosphate(*e*)	'000 tonnes	2,877	2,668	2,647

(*a*) Some products exclude production of single establishment manufacturing establishments employing less than four persons and production of establishments predominantly engaged in non-manufacturing activities but which may carry on in a minor way, some manufacturing. (*b*) Excludes secondary metal with the exception of pig iron and steel ingots. *Source*: Bureau of Mineral Resources, Geology and Geophysics (non-ferrous and precious metals only). (*c*) Metallic content. (*d*) Newly-won gold of Australian origin. (*e*) Includes double and triple superphosphate and ammonium phosphate expressed in terms of single superphosphate, i.e. 22% P_2O_5 equivalent.

Overseas trade

Exports and imports

For particulars of the quantities and values of the principal minerals and products exported from and imported into Australia during recent years, *see* Chapter 26, Foreign Transactions.

Considerable quantities of metallic ores, concentrates, slags, and residues are exported from Australia for refining overseas. The following table shows selected items exported during 1986 and their principal metallic content as estimated by assay.

PRINCIPAL METALLIC CONTENTS OF SELECTED ORES AND CONCENTRATES ETC. EXPORTED FROM AUSTRALIA, 1986

	Metallic contents—estimated from assay							
Ores and concentrates, etc.	*Copper*	*Lead*	*Zinc*	*Tin*	*Iron*	*Tungstic oxides*	*Gold*	*Silver*
	tonnes	tonnes	tonnes	tonnes	'000 tonnes	tonnes	kg	kg
Copper concentrate	65,746	1,437	2,110	—	—	—	—	6,105
Blister copper	—	—	—	—	—	—	—	—
Copper matte, slags, etc.(*a*)	1,354	1,678	15	—	—	—	102	9,157
Lead concentrate	5,144	92,284	1,804	—	—	—	1,735	226,126
Lead bullion	—	184,920	—	—	—	—	63	435,312
Lead slags and residues	59	9,903	12	20	—	—	209	23,983
Zinc concentrate	553	11,119	432,638	—	—	—	686	65,209
Zinc slags and residues	—	—	7,412	—	—	—	—	—
Tin concentrate	—	—	—	7,202	—	—	—	—
Tin slags and residues	—	40	—	150	—	—	—	—
Iron ore—								
Pellets	—	—	—	—	1,125	—	—	—
Fines	—	—	—	—	27,419	—	—	—
Lump	—	—	—	—	21,482	—	—	—
Scheelite concentrate	—	—	—	—	—	n.a.	—	—
Wolfram concentrate	—	—	—	—	—	578	—	—
Total metallic content	**72,856**	**301,381**	**443,991**	**7,372**	**50,026**	**n.a.**	**2,796**	**765,892**

(*a*) Includes copper matte, copper slags and residues and copper-lead dross and speiss.

REVIEW OF RECENT DEVELOPMENTS IN THE AUSTRALIAN MINERAL INDUSTRY

(*Source:* Bureau of Mineral Resources, Geology and Geophysics)

Major recent developments in the Australian mineral industry are reviewed briefly in subsequent parts of this section. Additional information on developments in the industry is available in *Australian Mineral Industry Annual Review* 1985 published by the Bureau of Mineral Resources, Geology and Geophysics. That publication contains comprehensive reviews of mineral commodities of importance to the Australian economy, as well as a general review of the industry's performance during the year. The *Australian Mineral Industry Quarterly,* Volume 39, Number 4, details Australia's identified mineral resources, 1986.

General review of 1986

The Gross Domestic Product (GDP) of Australia in 1985–86 was $238,939 million, of which an estimated $15,275 million was generated by the mining industry, excluding smelting and refining. If smelting and refining were included, an estimated $3,200 million could be added to this figure, thus making the mineral industry the largest primary sector contributor to the GDP.

The ex-mine value of mine production in Australia in 1986 was $19,720 million. This was $2,387 million, or 11 per cent, less than the record ex-mine value of $22,107 million established in 1985, and was the first fall for 25 years. The decrease in 1986 was mainly attributable to a fall in the value of petroleum products, from $10,098 million to $6,420 million, caused principally by the collapse of world crude oil prices. Despite the overall decrease, there were substantial increases in the ex-mine values of gold, black coal, diamonds and uranium. Apart from petroleum, the only major commodities to suffer significant falls were nickel, lead and manganese.

Imports—1986

The value of mineral imports has traditionally been dominated by crude oil although over the last two years that domination has weakened. In 1986, imports of crude oil fell by 36 per cent to $966 million; however this still represented 63 per cent of the total mineral import bill of $1,535 million which was down 24 per cent compared to 1985. Other significant mineral imports included phosphate rock, gold bullion, elemental sulphur and diamonds. Imports of mineral primary products in 1986 accounted for 4.3 per cent of the total value of merchandise imports compared with 5.9 per cent in 1985. Australia's mineral balance of trade (value of mineral exports minus value of mineral imports) was a record $13,276 million in 1986, marginally ahead of the 1985 balance of $13,238 million.

Exports—1986

The value of mineral exports fell slightly (3 per cent) to $14,811 million in 1986 compared to $15,262 million in 1985. Major minerals to show gains on their 1985 levels included aluminium, black coal, diamonds, gold, lead, mineral sands and uranium. Decreases were recorded for copper, crude oil, iron ore, LPG, nickel, tin and zinc among the major minerals.

Black coal remains the largest single export earner, accounting for $5,364 million or about 36 per cent of the total value of mineral primary products exported. Iron ore was the second largest with a value of $1,938 million (a decrease of 3 per cent compared to 1985) followed by alumina which was virtually steady at $1,427 million, and aluminium metal, $975 million (an increase of 13 per cent over the 1985 value). These four minerals together account for about two-thirds of the total value of mineral primary products exported. A significant contribution was also made by copper, crude oil, gold, lead, LPG, mineral sands, nickel, uranium and zinc.

Pattern of mineral trade—1986

During 1986, Australia exported minerals to more than 100 countries. Japan accounted for 41 per cent of these exports by value, about the same as in 1985. Principal mineral products exported to Japan included alumina, aluminium metal, black coal, copper, gold, lead, mineral sands, nickel and zinc.

The E.E.C. accounted for 17.7 per cent (including 4.6 per cent to the U.K.) of Australia's mineral exports. Major items comprised black coal, copper, iron ore, lead, mineral sands, uranium and zinc. U.S.A. accounted for a further 9.9 per cent consisting mainly of alumina, bauxite and nickel.

Bauxite, alumina and aluminium

In 1986, production of bauxite increased by 2 per cent to 32.4 million tonnes, alumina production increased by about 7 per cent compared with 1985, while aluminium production increased by 4 per cent to 881,910 tonnes. Australia was again the world's largest producer of bauxite and alumina.

In Western Australia all bauxite production is refined at either Alcoa's refineries at Kwinana, Pinjarra and Wagerup, or at Worsley refinery. In the Northern Territory bauxite not exported is refined at Nabalco's refinery at Gove, Northern Territory. In Queensland about 70 per cent of Weipa bauxite is refined at Gladstone (Queensland) and the balance exported.

Gladstone supplies alumina to Comalco's Boyne Island smelter, Queensland (207,000 tonnes per year capacity), to Alcan's Kurri Kurri smelter, New South Wales (capacity 150,000 tonnes per year), to the Bell Bay, Tasmania smelter (117,000 tonnes per year capacity) and to the Tomago, New South Wales (230,000 tonnes per year capacity). Tomago also receives alumina from Gove. Australia's remaining smelters, Point Henry (capacity 165,000 tonnes per year) and the newly opened Portland smelter (capacity 150,000 tonnes per year) are both in Victoria and receive alumina from Western Australia.

Copper

A summary of the copper mining industry in Australia 1953 to 1975 and the sufficiency of present ore reserves was published in the *Australian Mineral Industry Quarterly*, Vol. 30, No. 1.

In 1986 mine production of copper decreased by 4 per cent to 248,496 tonnes because of lower output from Warrego in the Northern Territory, the Mount Gunson mine in South Australia which ceased operations around mid-year and Teutonic Bore in Western Australia where milling operations ceased in the first half of the year. Production of primary blister copper increased slightly to 168,855 tonnes although production of primary refined copper declined slightly to 162,604 tonnes. Construction began on the Olympic Dam Project in South Australia in March 1986 and production from the first phase of the project is planned to begin around mid-1988. Annual production of about 30,000 tonnes of refined copper, 2,000 tonnes of U_3O_8 and about 2,800 kilograms of gold is planned.

Gold

In 1986, Australia's gold production increased for the sixth successive year, reaching 73,817 kilograms, the highest since 1913. During the year, 29 new gold mines were commissioned and plans were made to bring another 41 prospects to production in the future. Australia was the fourth ranking gold producer in the Western world in 1986.

Iron

A summary of growth of the Australian iron ore industry 1965 to 1975 was published in the *Australian Mineral Industry Quarterly*, Vol. 29, No. 1.

Production of iron ore in 1986 decreased by 4 per cent to 94.0 million tonnes. Substantial decreases in output at Pannawonica, Paraburdoo, Tom Price and Yampi Sound, were partially offset by increased production at Shay Gap, Middleback Range and Newman. Exports of iron ore and iron ore pellets also fell by 8 per cent to 79.7 million tonnes. Shipments of iron ore and pellets for consumption in domestic ironmaking and steelmaking increased to 9.3 million tonnes in 1986. Australia was the world's fourth largest producer, and continued to be the second largest exporter, after Brazil.

The Broken Hill Proprietary Co. Ltd (BHP) announced in 1986 that it planned to develop its limonite resources at Yandicoogina, 100 kilometres north-west of Newman. Resources which are close to the Newman-Port Hedland rail link are estimated at about 1,800 million tonnes. In 1986, CRA Ltd acquired a 50 per cent share in CSR Ltd's Yandicoogina deposits and the agreement provided access to Hamersley Iron's existing iron ore infrastructure. This lease, which is adjacent to BHP's holdings, is estimated to contain 3,000 million tonnes of limonite.

Goldsworthy Mining Ltd announced details of plans to invest $87 million, to enable an extension of its mining activities in the Shay Gap area for a further twenty years.

Silver, lead and zinc

Mine production of lead (449,427 tonnes) and zinc (694,472 tonnes) declined in 1986, largely because of the closure of the major Broken Hill mines in mid-year because of industrial disputes.

Production of primary refined zinc increased slightly in 1986, but the production of primary refined lead fell sharply because fewer concentrates were available as a result of the Broken Hill industrial dispute. Lead metal production including secondary was 171,039 tonnes and zinc metal production including secondary was 307,615 tonnes.

Detailed exploration of a number of deposits continued in 1986. These included Hilton, Lady Loretta, Thalanga, Liontown and Conjuboy, all in Queensland; Scuddles, Blendevale, Cadjebut and Twelve Mile (Lennard Shelf) in Western Australia; Benambra, Victoria and Hellyer in Tasmania.

Black coal

Raw black coal production in 1986 was a record 169.9 million tonnes, 7 per cent higher than in 1985. The output of saleable coal rose by 7 per cent to the record level 139.1 million tonnes. Domestic consumption rose to the record level of 43.4 million tonnes in 1986, mainly due to the growth in use by the electricity industry. Exports rose by 5 per cent to 92.0 million tonnes in 1986 and the value of exports rose to $5,327 million. Of total exports 41.9 million tonnes were shipped to Japan. Australia was the world's leading coal exporter in 1986.

Demand for steaming coal on the international market has remained high. As a result Australian exports of steaming coal rose to 43.3 million tonnes in 1986. Downturn in the world's steel industry in 1985 and 1986 caused Australian exports of coking coal to fall by 2 per cent in 1986 to 48.7 million tonnes.

Papers dealing with the Australian coal industry have been published in the *Australian Mineral Industry Quarterly*, Vol. 31, No. 1 and Vol. 34, No. 2.

Petroleum

At the end of 1986 there were 101 fields producing stabilised crude oil, which is 25 per cent more than in 1985 (81 fields). In 1986 production of crude oil fell by 12.3 per cent to 27.7 million cubic metres compared to the 1985 record level of 31.6 million cubic metres. The production of natural gas and condensate rose by 9.2 per cent and 10.7 per cent respectively.

Total refinery input declined by 2.6 per cent and the proportion of total input from indigenous sources decreased from 80 per cent in 1985 to 77 per cent in 1986. Consumption of automotive gasoline (motor spirit) decreased by 3.2 per cent. Consumption of all other major petroleum products except automotive diesel oil and aviation turbine fuel also decreased. The quantity of imported crude oil, enriched crude oil and other refinery feedstock increased by 18.4 per cent in 1986 compared with that in 1985, however its value decreased by 28.3 per cent from $2,133 million to $1,531 million. Total exports of petroleum products fell in value in 1986 by 45.5 per cent to $1,797 million, compared to $3,300 million in 1985.

The number of exploration wells drilled decreased from 270 in 1985 to 139 (111 onshore, 28 offshore) in 1986, and total metres drilled for exploration decreased from 512,112 m in 1985 to 275,256 m in 1986, a decrease of 46.3 per cent. Geophysical exploration also decreased during 1986. Offshore exploration resulted in one oil, two gas and two oil and gas discoveries, and two gas/condensate discoveries. Onshore exploration produced fifteen oil, ten gas, five oil and gas discoveries, and seven gas/condensate discoveries. Development drilling in 1986 was below the level achieved in the last 5 years. The total of 37 development wells drilled was 61 per cent less than in 1985 (94 wells). Onshore drilling (17 wells) was down 78 per cent compared with 1985 (76 wells), and offshore drilling (20 wells) was marginally more than for 1985 (18 wells). Development wells were drilled offshore at Flounder (7), Snapper (5), Fortescue (3), and at North Rankin (5) platforms.

In 1986 there was a rapid decline in world oil prices followed by a slow recovery to about three quarters of the early 1985 value. In spite of this, several new developments proceeded during 1985 and 1986, the largest being the start of construction of the Liquefied Natural Gas (LNG) export phase of the North West Shelf gas project, designed to supply LNG to Japan commencing in 1989. The construction of a 1,500 kilometre gas line linking the Palm Valley and Mereenie fields to supply gas to the Channel Island power station in Darwin was another major development. In the Bass Strait Flounder, Snapper, Cobia and Fortescue development drilling proceeded, and the Bream platform was installed. Development drilling of the field from this platform commenced in 1987. Other significant developments in 1985 and 1986 were the installation of facilities, development drilling and initiation of production at the Jabiru and Harriet oil fields, and the development drilling of Palm Valley and Mereenie fields.

In Queensland, plants to extract liquids from gas were built at Kincora and Wallumbilla in the Surat Basin, and a small refinery was built at Eromanga to supply products locally, using oil from nearby fields as feedstock. The township of Warrnambool in Victoria was connected to the North Paaratte gas field, and an oil pipeline was constructed to connect Alice Springs to the Mereenie oil and gas field.

Plans are being formulated for the development of the Challis, Saladin, and North Herald/South Pepper offshore fields in Western Australia.

The Centre for Petroleum Engineering Studies was established at the University of New South Wales. This is the first Australian institution which will provide graduates in Petroleum Engineering to the industry.

Economic and sub-economic demonstrated resources of crude oil at 31 December 1986 were 262 gigalitres, a decrease from the previous figure of 289 gigalitres at the end of 1984. Economic and sub-economic demonstrated resources of gas increased to 2,089,000 million cubic metres. Expenditure on petroleum exploration decreased 22 per cent from $750.0 million in 1985 to $586.8 million in 1986.

Nickel

Mine production of nickel in ore and concentrates was an estimated 78,000 tonnes in 1986. Australia was the third largest world producer after Canada and U.S.S.R. Concentrates produced in Western Australia are smelted at the Kalgoorlie nickel smelter. Some of the matte produced is railed to the Kwinana nickel refinery to be refined to nickel metal and the remainder is exported. Nickel-laterite ore mined at Greenvale, Queensland, is treated at the Yabulu nickel treatment plant to produce nickel oxide sinter for export.

Mineral sands

The history of the mineral sands industry is presented in the *Australian Mineral Industry Quarterly*, Vol. 25, No. 1, and updated in the Proceedings of the Australasian Institute of Mining & Metallurgy, Symposia Series, No. 46.

Australia is still the world's largest producer and exporter of natural rutile, ilmenite, zircon and monazite. Output of concentrates in 1986 were: rutile production 220,046 tonnes, ilmenite 1,291,349 tonnes, zircon 419,290 tonnes and monazite 10,583 tonnes.

Diamonds

Commercial production of diamonds from the alluvial deposits in the Upper Smoke Creek and Limestone Creek alluvials and from the scree deposits overlying the AK-1 Kimberlite pipe at Argyle commenced in January 1983; the alluvial and scree deposits were mined out in 1985. In its first year of full scale mining of the AK-1 pipe, Argyle Diamond Mines Pty Ltd produced 29,210,764 carats of diamonds in 1986, easily exceeding production from any other mine in the world, or for that matter, the annual production from any country. Diamonds from the AK-1 pipe comprise about 6 per cent gem, 39 per cent cheap gem and about 55 per cent industrial grades.

Uranium

Preliminary estimates of production of uranium in Australia in 1986 amounted to 4,899 tonnes of U_3O_8 (4,154 tonnes contained U) 30.0 per cent greater than in 1985. Exports for 1986 were 4,166 tonnes of U_3O_8 (preliminary estimates only).

HISTORICAL DEVELOPMENT OF THE AUSTRALIAN MINERAL INDUSTRY

(This special article has been contributed by the Bureau of Mineral Resources—written by I. R. McLeod)

The history of the Australian mineral industry began with the first European settlement when settlers quarried stone and dug clay for bricks for their buildings. The industry since then has had its booms and depressions, but from the discovery of gold at least, it has been an important contributor to the Australian economy. It provides the nation's basic industrial requirements—construction materials, fuel, and industrial raw materials; it has facilitated decentralisation of both population and industry, as towns, railways and ports were established to serve the mines and smelters; it has encouraged technological advancement, both in its own and other, unrelated, fields; and it has been a major earner of export income.

The industry has created wealth for the nation and its people through the discovery and mining of mineral deposits and processing the ore. It now produces some 65 different mineral commodities with an annual value of mine production ranging up to more than $5,000 million in the case of coal. Australia is one of the world's leading miners of bauxite (the ore of aluminium), diamonds, gold, iron ore, lead, manganese ore, nickel, titanium (rutile and ilmenite), tungsten, zinc and zircon. It mines, or has unworked deposits of, almost all mineral commodities—of the major mineral raw materials it now lacks only sulfur. Some commodities, such as petroleum and aluminium, have had a relatively short production history in Australia; others, such as the base metals, iron ore, and, especially, coal, go back to the early days of the industry.

AUSTRALIAN ECONOMIC DEMONSTRATED RESOURCES, MAJOR MINERAL COMMODITIES

(Mt unless otherwise indicated)

Commodity	*Pre 1965(a)*	*1975*	*1985*
Bauxite	21(1954)	3,000	2,889
Black coal (recoverable)	(*b*)4,276(1962)	19,500	34,000
Brown coal (recoverable)	17,000(1960)	12,600	41,900
Copper (kt)	1,300(1960)	5,900	16,100
Diamond (10^6 carat)			
gem	—	—	187
industrial	—	—	229
Gold (t)	250(1960)	156	959
Iron ore	374(1959)	17,800	16,220
Lead (kt)	4,300(1960)	13,900	14,500
Manganese ore	<2(1962)	490	326
Nickel (kt)	—	1,900	1,700
Petroleum (10^6m^3)			
crude oil	—	243	231
natural gas	—	326,100	691,000
Silver (kt)	7(1960)	24	31
Tin (kt)	(*c*)28(1960)	(*c*)332	262
Titanium (concentrate)			
ilmenite (kt)	(*d*)3,500(1955)	58,400	41,400
rutile (kt)	2,500(1955)	9,200	8,000
Uranium (recoverable) (kt)	n.a.	300	470
Zinc (kt)	4,000(1960)	19,300	21,200
Zircon (kt) (concentrate)	2,900(1955)	15,700	11,500

(*a*) Only partly on same basis as later years. (*b*) Excludes Victoria, where reserves were small. Not specified whether in situ or recoverable. (*c*) Recoverable; in situ resources estimated to be about 20 per cent higher. (*d*) Not suitable for pigment production.
Source: Bureau of Mineral Resources.

Coal

It is not surprising that coal was the first mineral, other than those used for construction, to be found, because seams crop out along the coast to the north and south of Sydney. Coal was first discovered in the Newcastle area by escaped convicts in 1791. Mining began near Newcastle in 1799, and in 1800 coal became the first mineral exported from Australia.

Production increased steadily from the 1830s onwards, and in the mid-1920s Australian production was almost 14 Mt, but the depression of the 1930s saw it fall by over a third of this amount. Renewed growth faltered in the late 1940s. Exports, which normally exceeded 1 Mt/year until the mid-1920s, had fallen to about 50,000 t by the late 1940s because of increasing competition. At that time also, petroleum products began to replace coal in industry and railways, and these trends were exacerbated by prolonged industrial unrest.

It was widely agreed then that coal would be of diminishing importance as a major mineral commodity. However, measures taken to improve the efficiency of mining, realisation of the economic importance of near-surface seams in the Bowen Basin in Queensland, and the emergence of large markets for coking coal in Japan particularly, brought about a resurgence in the industry. Exports began to increase rapidly in the mid-1950s, and, with impetus added by the oil shocks of the 1970s, Australia became the world's largest coal exporter, with exports reaching 88 Mt in 1985.

The pattern of production changed also. In 1950, New South Wales provided 75% of the total production and Queensland, 14%. In 1985, the two States provided 47% and 49% respectively, and exports from the two were about equal, 68% of the total Australian production being exported. Despite its changing fortunes, the coal industry has been a major sector of the mineral industry for 150 years. The rapid increase in exports in the 1960s consolidated its pre-eminence; in 1985 coal contributed 24% of the total value of ex-mine production in Australia, represented about a third of the industry's total assets, and provided 16% of total Australian merchandise exports.

Minerals

In the circumstances at the time, the early settlers were little interested in minerals. Traces of gold were reported from 1823 onwards, and occurrences of other metals were reported from time to time. The first metalliferous mining was of silver-lead, at Glen Osmond near Adelaide, in 1841. Copper mining began at Kapunda, in the same general area, in 1842, and at Burra, to the north, in 1844. At the end of the same decade, the first pig iron was produced from a small deposit of iron ore near Mittagong, New South Wales.

It was the discovery of payable alluvial gold in 1851 near Bathurst in New South Wales and, soon after, the rich Victorian fields, that gave impetus to the metalliferous sector of the mineral industry. As search and discovery quickly spread to other parts of eastern Australia, the migrants which the gold attracted, the infrastructure which resulted, and realisation of the mineral potential of the young country, all profoundly influenced the development of Australia from the 1850s onwards.

The wealth created by the newly-mined gold and the influx of migrants began the transition away from an agricultural and pastoral economy. As industries were established to supply the machinery and transport facilities needed by the mines, service industries expanded to cater for increasing population and growing commercial activities.

Gold was the prospectors' prime target for many years after 1851, and the Victorian discoveries were followed by many others around the continent, though few were so rich. Many of the new gold-fields were abandoned as the shallow surface alluvials were exhausted, but on some, especially in Victoria, mining progressed to the deep leads—alluvial deposits covered by tens of metres of later sediments or by lava flows.

Prospecting on some fields discovered primary gold lodes rich enough to be worked. But working such lodes necessitated deep shafts and machinery and treatment plants, and these required capital. The individual miner or syndicate was replaced by companies, employing dozens or even hundreds of men. Towns were established and, as confidence in the long life of the mines increased, tents and shanties gave way to more permanent private and commercial buildings. When, decades later, the mines did start to peter out, many such towns survived because they had become centres for the surrounding agricultural and pastoral industries, or were at convenient points on well established transport routes.

The interest and expertise in prospecting aroused by gold soon led to discoveries of other metals. Tin mining began almost simultaneously in 1872 at Inverell, New South Wales, Mount Bischoff, Tasmania, and Stanthorpe, Queensland. With the discovery soon after of other fields, especially Herberton in North Queensland, Australia became the major world source of tin in the late 1870s and early 1880s. Base metals were discovered at many places, including Moonta-Wallaroo, South Australia, Zeehan-Dundas and Mount Lyell, Tasmania and Cobar, New South Wales, and Mount Morgan, Queensland. The fabulous Broken Hill lode, whose profits spawned a variety of industries, including steel at Newcastle in 1915, was discovered in 1883.

By the beginning of the twentieth century, the metalliferous mining industry, with associated smelters and refineries, was well established. Gold was still pre-eminent, accounting for three quarters of the total value of metalliferous mine production, with copper, lead and silver accounting for most of the remaining quarter.

Like the goldfields, each mine needed a town for its workers, engineering and machinery suppliers and transport facilities—including ports to ship its products to other parts of the world. Many towns in existence today owe their foundation to a mineral deposit found in the last four decades of the nineteenth century.

The industry continued to prosper in the early years of the twentieth century. However, it was severely affected by the collapse of metal prices after the ending of World War I. Many mines closed, and the value of mineral exports fell from $15.3 million in 1919–20 to $7.6 million in 1921–22.

In the late 1930s the mineral industry, although well established, played a minor role in the Australian economy. The need for new ore reserves of many minerals was the major concern of the industry in the late 1930s and early 1940s. Indeed, the forty-year drought of new discoveries, after the flood of the previous century, led some to the belief that there were few new resources to be found, and that the industry would gradually run down. An embargo was placed on the export of iron ore in 1938 by the Commonwealth Government, when reserves of high-grade ore were believed to be no more than 260 Mt. Few new mineral deposits were found from the beginning of the century until after World War II.

In the late 1940s there began a series of discoveries that was to completely change the structure of the industry and elevate Australia to a major mineral exporting country. In the 1950s the mainstays of the industry were lead, zinc, copper, gold, and coal, and only the first four were exported in any quantity. By the late 1960s Australia was a world force in aluminium, coal, iron ore, nickel, manganese, titanium, uranium and zirconium as well as the traditional lead and zinc.

The reason for the surge of discoveries is manifold. Some of the 'new' deposits had been known previously, but were not economically workable. The economics of working such deposits changed remarkably because of technological advances which lowered the cost of mining and transporting huge quantities of material, but these advances would not have been decisive without the emergence of Japan as a major buyer of coal, iron ore and bauxite.

The discovery of new ore bodies close to former mines and the striking of the many new deposits was aided by the development of geochemical and geophysical exploration methods suited to Australian conditions. Many techniques developed in the northern hemisphere were not successful in the arid, deeply weathered terrain characteristic of most of Australia. However, these techniques were modified and new ones developed, and Australia is now a world leader in expertise for mineral exploration in arid regions.

Apart from Japan's economic growth, the expansion of the world economy in the 1950s and 1960s meant an ever increasing demand for minerals. Australia, with its well established industry, had the experience needed to find and develop the new deposits needed to meet this demand.

The greatly increased knowledge of the geology of Australia resulting from systematic geological and geophysical studies led to a better understanding of the geological evolution of the continent. Mineral explorers were able to search more efficiently by using geological theories on the origin of mineral deposits to target specific areas for concentrated exploration. The better understanding showed also that Australia had a high potential for the discovery of mineral deposits. This realisation, together with Australia's political stability, led to an influx in the early 1960s of major overseas mining companies who, in addition to increasing exploration expenditure, brought in new expertise and ideas.

The search for a variety of minerals in diverse geological conditions has developed a highly experienced mineral exploration industry which has begun exporting its skills to other parts of the world.

Petroleum

The 1960s saw also the discovery of economic accumulations of what had been Australia's most serious mineral deficiency—petroleum.

Although it had been sought for many years, petroleum (which includes crude oil and natural gas) was a latecomer to the mineral production scene in Australia. However, it has made up for lost time and has become one of Australia's major mineral products in terms of value of production; and in 1985, following a change in government policy on petroleum exports, it was Australia's second most valuable mineral export.

Hydrocarbons, in the form of crude bitumen, were first recorded in 1839, at the mouth of the Victoria River, near the Western Australia–Northern Territory border. The first well drilled specifically for petroleum was put down in 1882 at Alfred Flat, in the Coorong area of South Australia. However this well, and several others in the same general area, did not encounter any oil.

In 1900, at Roma in Queensland, natural gas was encountered in an artesian water bore which was being deepened. Gas continued to flow freely from the well and in 1906 it was reticulated for town lighting; however, the flow failed after 10 days. This discovery marks the real beginning of petroleum exploration in Australia. Many wells were drilled subsequently in the Roma region; some encountered small quantities of oil or gas.

The first substantial flow of oil was in 1953 from the Rough Range No. 1 well in the north-west of Western Australia. However, a commercial field did not eventuate, and the interest in petroleum exploration aroused by the discovery began to wane. Because of the economic and strategic advantages of an indigenous supply of petroleum, the Commonwealth Government had encouraged the search for it since soon after World War I. With the increasing importance of petroleum and petroleum products to the Australian economy, the Government in 1957 adopted several measures, including a subsidy for specific approved operations, to encourage petroleum exploration. These measures did much to re-encourage exploration.

Australia's first commercial oil field was discovered at Moonie, 200 km south-east of Roma, in 1961. A pipeline was built to Brisbane, and commercial production began in 1964. 1964 marked several other important events: the discovery of oil and gas at Barrow Island, Western Australia; of gas in what has become a cluster of oil and gas fields in north-west South Australia and the adjoining part of Queensland; and the most important of all, the discovery of gas some 25 km off the Gippsland coast in Australia's first offshore well. The Gippsland shelf fields now supply three quarters of the crude oil and nearly half of the natural gas produced in Australia.

The Gippsland Shelf discovery, as well as becoming Australia's main source of oil and gas, also turned attention to Australia's extensive continental shelf, and 1971 saw the discovery of the huge gas fields of the North West Shelf which, in addition to supplying Western Australia, will begin to feed one of the world's few liquefied natural gas export projects at the end of the 1980s.

In the early 1970s, petroleum exploration again began to languish—indications from exploration were that onshore oilfields probably would be small and hence unlikely to be economic. However, the oil shocks of 1973 and 1979, when oil prices increased several-fold, completely changed the economics of the industry. Expenditure on exploration increased rapidly, from $49 million in 1976 to $948 million in 1982. Some known fields, such as Palm Valley and some Bass Strait fields, were developed, and many new fields were discovered, especially in south-west Queensland and the adjoining part of South Australia.

While exploration has been primarily for oil, it has discovered large resources of natural gas. Indeed, indications are that geological conditions in Australia in the past have favoured the formation of gas rather than oil. Natural gas contributed 19 per cent of total Australian energy consumption in 1985.

Most Australian crude oils are 'light', and oil still has to be imported to supply heavy fractions needed for lubricating oils, bitumen, etc. In 1985, 96 per cent of Australia's crude oil requirement was met by domestic production. However, unless major new discoveries are made, Australia's crude oil self sufficiency will begin to decrease as production from some existing fields declines. Natural gas supplies, however, are adequate for many years, although resources are unevenly distributed around the continent.

Twenty years of growth

In the mid-1960s, the Australian mineral industry began to expand with growth in both production and exports and the relative importance of the various commodities changed. The relative importance of gold and the base metals declined, while coal, iron ore and 'other minerals' increased in relative importance.

In 1965, industry spent $22 million on mineral exploration, and $48 million on petroleum exploration. These amounts had increased to peaks of $576 million in 1981–82 on mineral exploration, and $948 million in 1982 on petroleum exploration. Allowing for inflation these peaks represent a multiplication of exploration effort of seven times for minerals and five times for petroleum.

The Australian manufacturing industry, despite its growth, absorbed only a small part of the greatly increased mineral production, and the proportion of production exported (in either raw or processed form) increased greatly in the late 1960s and early 1970s. The index of mineral output at constant prices for 1985 was almost 6 times that for 1965, while the 1985 index of exports of metals and minerals at constant prices was over 11 times the 1965 figure. These exports relieved the pressure on the Australian balance of payments but also made the industry dependent on the health of the world economy.

The destination of exports changed between 1965 and 1985. In 1965, 41% of Australia's mineral exports went to Europe (and 24% of total exports were to the United Kingdom); 41% went to Asia (32% of the total going to Japan); and 16% went to America. In 1985, the corresponding figures were 14% (4%); 63% (41%); and 12%. In 1985 mining, smelting and petroleum production contributed 8% of the Australian GNP, was responsible for 16% of private fixed capital expenditure, and employed 132,000 persons.

In the early 1980s, lower mineral prices resulting from decreased world demand for minerals caused a drastic decline in the Australian industry's profitability; which was only 2.2 per cent of shareholders funds in 1981–82. Measures to increase efficiency, including mining higher grade ores, work-force reductions and changed work practices, and, in a number of cases, mine closures, had their effect, and by 1985–86 the return on shareholders funds had increased to 4.9 per cent.

Australia is now the world's first, second or third largest exporter of about 10 mineral commodities (including alumina, coal, iron ore, lead, nickel, mineral sands—rutile, ilmenite and zircon—and zinc) and a major exporter of many others.

The Australian mineral industry is almost all owned and operated by the private sector. For much of the industry's history the relationship between it and government generally had been simple: State governments granted mining leases, ensured that the mining laws were observed, and collected royalties; the Commonwealth Government collected those taxes to which it was entitled.

Many of the new mines were planned as large scale operations from the very beginning. They needed a large workforce—which had to be housed and provided with community services—and transport facilities to handle millions of tonnes of product each year. Rather than provide these facilities themselves, governments made it a condition of many new mining leases that the companies provided, or made a major financial contribution to, the infrastructure for the mining operation—not only the railways and ports, but the social infrastructure such as streets, houses, schools, hospitals and recreation facilities.

This requirement arose partly because governments had difficulty finding the funds required because of competing demands in a time of rapid economic expansion; but another argument was that, because the mineral deposits belonged to the State, the benefits of their exploitation should go to the public generally as well as the companies concerned. Some governments took this argument further, and made the industry a source of revenue additional to the relatively small amount of royalty payments by imposing charges for services (e.g. rail freights) considerably higher than the cost of providing the service.

Environmental issues

In the 1950s the industry began to be affected by increasing public concern for the quality of the environment. With the rising awareness that preservation of natural features such as scenery and plant and animal habitats had a value to society, governments increased the controls on discharge of potentially polluting emissions such as water containing sediments or chemicals, and noxious gases. Whereas the industry once, by and large, had priority in land use, it now had to justify its activities in competition with other potential uses of the land. Governments also took account of the likely effect of a proposed mining or treatment process on the surroundings before deciding whether it should go ahead, and required that, where feasible, mined-out areas be rehabilitated by reshaping and revegetating the surface so that the site could be used for other purposes.

The mineral industry's former priority for land use was eroded further in the 1970s when title to extensive tracts of land in the Northern Territory and some States was granted to the land's traditional Aboriginal owners. One result of this was that companies had to obtain the consent of the Aboriginal owners before they could explore or mine on such land. Because of the significance of land to Aboriginal society, and because of the owners' wish to minimise the effect of a different culture on their traditional way of life, this requirement commonly required prolonged negotiations and this in turn added to the costs and uncertainty of the mineral exploration process.

The industry today

In the late 1970s, the rate of growth of the mineral industry in Australia, which had been maintained for more than 15 years, began to slow. New mines had been developed around the world to meet a forecast demand for minerals which turned out to be overly optimistic. The Australian industry's costs had increased but, in general, mineral prices had not. The industry was largely dependent on exports and had to compete for sales with mines in other countries; some of these mines were less affected by cost increases, or were assisted in various ways by their governments.

Many new coal mines were established in Australia after the second oil shock in 1979, but world demand stagnated, leaving the industry in Australia (and the world) with substantial surplus capacity. Metal prices failed to increase in line with the world economic upturn in the early 1980s, and few new metal mines were opened—Australian production increased largely because of capacity increases at existing mines to achieve economies of scale. Statistics show mine production and exports increased year after year, but the return on funds employed generally was low and a number of mines closed because they had become uneconomic. Petroleum exploration expenditure had increased rapidly after the second oil shock in 1979; several new commercial fields were discovered, especially in south-west Queensland, and, because of the greatly increased price of crude oil, decisions were made to develop some previously uneconomic fields. However, the collapse of world crude oil prices in the first quarter of 1986 completely changed the fortunes of the petroleum industry. Production fell (mainly because of virtual cessation of exports), exploration was reduced sharply, and development of a number of fields was deferred.

At the exploration stage, the industry has to meet new challenges. Not surprisingly, the mineral deposits found in the first century of mineral search were those well exposed at the surface; and the first petroleum accumulations found tended to be the larger, better delineated, ones. Consequently, finding further economic ore bodies and petroleum accumulations has become progressively more difficult, requiring the use of increased skills in applying suitable methods and interpreting the results.

By the mid-1980s, one of the few bright spots in the Australian mineral industry was gold. Because its price was fixed, gold was largely ignored in the expansion of the industry after World War II. Interest revived to some extent when the price was freed in 1968 and strengthened with increasing confidence that the price increases of the late 1970s were likely to be sustained.

Two other factors heightened the interest. One was the development of an efficient method of recovering very fine grained gold; the other was the realisation that modern methods allowed the economic mining by open cut and treatment of an entire zone of gold bearing veins (both the veins and the intervening barren rock) whereas in the past only the veins themselves would have been mined.

So another gold mining boom emerged in the early 1980s. Australian gold production multiplied from 18 t in 1981 to 57 t in 1985. In 1984 and 1985 alone, 24 new gold mines were opened, and retreatment of old tailings began at several centres. Notably, almost all the deposits opened up were close to, or at, old mines—very few were completely new discoveries.

History probably will show that the 1980s was another period of change for the mining industry: a period of consolidation rather than expansion, especially in the structure of the industry, even though the volume of production continued to increase; a period of increasing diversity of export markets, with reduced dependence on a few major customers; a period of strenuous efforts to improve the efficiency of operations; and a period in which the Australian industry, despite far-reaching changes in world mineral production and consumption patterns, was able to retain its role as a major supplier to international markets, and a major source of income for the Australian economy.

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CHAPTER SIXTEEN

WATER RESOURCES

This chapter is divided into two major parts—existing water resources in Australia and the management of these resources. The former provides information on such topics as the geographic background to water resources, surface and groundwater supplies and use, and the drainage divisions in Australia. The latter summarises Australian and State assessment and management of water resources.

For information concerning general, descriptive and historical matter *see Year Book* No. 37, pages 1096–1141 and *Year Book* No. 51, pages 228–31. A special article on drought in Australia, contributed by the National Climate Centre, is included at the end of the chapter.

Introduction

Rainfall, or the lack of it, is the most important single factor determining land use and rural production in Australia. Chapter 5, Physical Geography and Climate of Australia contains details on geographical and climatic features that determine the Australian water pattern. The scarcity of both surface and groundwater resources, together with the low rates of precipitation which restrict agriculture (quite apart from economic factors), has led to extensive programs to regulate supplies by construction of dams, reservoirs, large tanks and other storages.

Geographic background

General

Water resources are determined by rainfall, evaporation and physical features including soil, vegetation and geology. Chapter 5, Physical Geography and Climate of Australia, contains a detailed description of the climatic features of the country. A brief description of the landforms appears in *Year Book* No. 61, pages 25–27. In assessing Australia's water resources, dependability and quality of supply must be considered, as well as quantity.

Topography

The major topographical feature affecting the rainfall and drainage patterns in Australia is the absence of high mountain barriers. Australia's topographical features range from sloping tablelands and uplands along the east coast Main Divide, through the low plain and marked depression in the interior to the Great Western Plateau.

Drainage

Only one-third of the Australian land mass drains directly to the ocean, mainly on the coastal side of the Main Divide and inland with the Murray–Darling system. With the exception of the latter, most rivers draining to the ocean are comparatively short but account for the majority of the country's average annual discharge. Surface drainage is totally absent from some arid areas of low relief.

Climate

Australia's large area (7.7 million square kilometres) and latitudinal range (3,700 kilometres) have resulted in climatic conditions ranging from alpine to tropical. Two-thirds of the continent is arid or semi-arid, although good rainfalls (over 800 mm annually) occur in the northern monsoonal belt under the influence of the Australian–Asian monsoon, and along the eastern and southern highland regions under the influence of the great atmospheric depressions of the Southern Ocean. The effectiveness of the rainfall is greatly reduced by marked alternation of wet and dry seasons, unreliability from year to year, high temperatures and high potential evaporation.

Settlement

The availability of water resources controls, to a large degree, the possibility and density of settlement; this in turn, influences the quality of the water through production and disposal of waste. Most early settlements were established on the basis of reliable surface water supplies and, as a result, Australia's population is concentrated along the coast, mainly in the comparatively fertile, well-watered east, south-east and far south-west.

As settlement spread into the dry inland grazing country, the value of reliable supplies of underground water was realised. Observations of the disappearance of large quantities of the rainfall precipitated on the coastal ranges of eastern Australia eventually led to the discovery of the Great Artesian Basin which has become a major asset to the pastoral industry. Development, however, has not been without costs. Significant environmental degradation and deterioration in water quality are becoming evident.

For further information on the influence of water resources on the spread of settlement in Australia *see Year Book* No. 61, page 860.

In the text and tables below, water volume, usage and flow are shown in litres rather than in cubic metres as in earlier issues. Equivalence and terms used are:

(KL) Kilolitres= 1.00 x 10^3 litres (1 cubic metre)
(ML) Megalitres= 1.00 x 10^6 litres
(GL) Gigalitres= 1.00 x 10^9 litres
(TL) Teralitres= 1.00 x 10^{12} litres

Surface supplies

Distribution and volume

As described above, permanent rivers and streams flow in only a small part of the continent. The average annual discharge of Australian rivers has been recently assessed at 398 teralitres (TL) of which 100 TL is now estimated to be exploitable for use on a sustained yield basis. This is small in comparison with river flows on other continents. In addition, there is a pronounced concentration of runoff in the summer months in northern Australia while the southern part of the continent has a distinct, if somewhat less marked, winter maximum.

Variability of flow

Even in areas of high rainfall, large variability in flow means that, for local regional development, most streams must be regulated by surface storage. However, in many areas evaporation is so great that storage costs are high in terms of yield. Extreme floods also add greatly to the cost of water storage, because of the need for adequate spillway capacity.

Potential development

Some 83 per cent of all water used in Australia is surface water. This quantity is about 21.5 TL a year and represents about 21 per cent of the possible usable surface water available in Australia; it does not include the amount diverted for hydro-electric power generation and other instream purposes which does not affect the quantity of water available. However, the great variability of river discharge, high evaporation, lack of sites for storage on many catchments, and economic considerations limit potential development. There is, however, considerable scope for greater efficiency in water use.

Groundwater supplies

About 80 per cent of Australia is significantly dependent on groundwater supplies. Australia's estimated sustainable groundwater yield is 72 TL, and annual groundwater usage is estimated at about 2.2 TL.

Groundwater is divided according to its occurrence in the three main classes of aquifer:

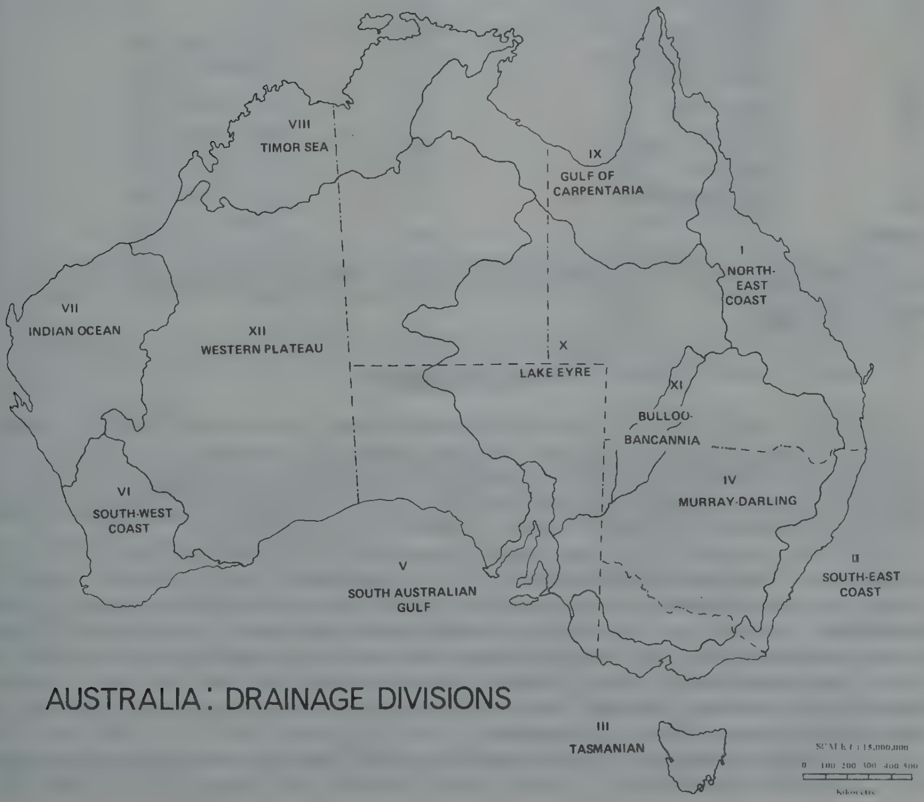
(i) **Shallow unconsolidated sediments** comprise alluvial sediments in river valleys, deltas and basins; aeolian (windblown) sediments which generally occur in coastal areas; and lacustrine (lake) sediments. These sediments are often highly permeable and porous. Permeability and porosity may vary markedly according to orientation. Unconsolidated aquifers of this group generally occur at depths of less than 150 metres and are often readily accessible to sources of water for recharge. Marked seasonal variations in water level are common.

(ii) **Sedimentary rocks** are generally made up of consolidated sediments. The aquifers owe their porosity to small voids between the grains which are often well compacted and cemented. They often cover significant areas, being continuous and of appreciable thickness. Rock strata usually dip quite gently. Nevertheless, over the full extent of the larger sedimentary basins, aquifers may reach great depths. Areas where recharge takes place may be small in relation to the extent of the aquifers. Water quality in individual aquifers may be quite good and fairly uniform over large areas. Some sediments contain a number of permeable and impermeable layers, creating a vertical sequence of separate aquifers, and water quality may vary greatly between them.

(iii) **Fractured rocks** comprise hard igneous and metamorphosed rocks which have been subjected to disturbance and deformation. Aquifers resulting from the weathering of any rock type are also included in this group. Water is transmitted mainly through joints, bedding planes, faults, caverns, solution cavities and other spaces in the rock mass.

The quality of groundwater varies considerably and sources are subject to pollution in much the same way as surface supplies. As a general rule, groundwater from shallow unconsolidated sediments is of good quality but there are instances where groundwater has been polluted, particularly around major urban centres, by sewerage effluent, drainage from refuse tips and from specific industrial pollutants. Supplies from sedimentary basins and fractured rocks are more variable in both quality and quantity, especially in the more arid regions of the continent. High nitrate concentrations tend to be a common occurrence in groundwaters in northern and central Australia.

Drainage divisions and the use of surface and groundwaters


VIII
TIMOR SEA
IX
GULF OF
CARPENTARIA
I
NORTH-
EAST
COAST
VII
INDIAN OCEAN
XII
WESTERN PLATEAU
X
LAKE EYRE
XI
BULLOO-
BANCANNIA
IV
MURRAY-DARLING
VI
SOUTH-WEST
COAST
V
SOUTH AUSTRALIAN
GULF
II
SOUTH-EAST
COAST
III
TASMANIAN
SCALE 1 : 15,000,000
0 100 200 300 400 500
Kilometres

AUSTRALIA: DRAINAGE DIVISIONS

To promote a unified approach, river basins or groups of river basins have been adopted as the primary units of assessment. The *Review of Australia's Water Resources 1975* (Department of National Development and Energy, Australian Water Resources Council, Canberra) contains a summary of the 244 river basins grouped into twelve divisions, together with a map showing the divisions. (*See* above.)

The conjunctive approach to water resources, even to importing water from outside the region, generally makes more water available for use than would be the case with independent use of the various sources. *Year Book* No. 61, pages 867–8 contains details of the conjunctive use of surface and groundwaters.

The second national survey of water use, *1985 Review of Australia's Water Resources and Water Use*, has been conducted by the Australian Water Resources Council. The exploitable yield of surface water for each river basin (aggregating to drainage divisions) was reassessed. The estimates do not take into account the economic potential or value of the diverted water, or the desirability of developing the resource. They represent the volume of water able to be diverted on a regular basis into conventional water supply systems or to substantial private use, utilising existing storages and potential dam sites.

SURFACE WATER: ESTIMATES OF MEAN RUNOFF, TOTAL POSSIBLE EXPLOITABLE YIELD AND CURRENT USE BY DRAINAGE DIVISIONS

(*Source:* Australian Water Resources Council, 1985)

Drainage division		*Surface water (teralitres per annum)*			*Use as percentage of exploitable yield(%)*
		Mean runoff	*Total possible exploitable yield(a)*	*Use(b)*	
I	North-East Coast	84	23	3.5	15
II	South-East Coast	42	15	4.3	28
III	Tasmania	53	11	1	9
IV	Murray-Darling	25	12	10	81
V	South Australian Gulf	1	0.3	0.1	44
VI	South-West Coast	7	3	0.4	13
VII	Indian Ocean	4	0.3	n.s.	9
VIII	Timor Sea	81	22	2	9
IX	Gulf of Carpentaria	93	13	0.1	1
X	Lake Eyre	6	0.2	n.s.	13
XI	Bulloo-Bancannia	1	n.s.	n.s.	—
XII	Western Plateau	2	0.1	n.s.	—
Australia	. . . .	**398**	**100.0**	**21.5**	**21**

(*a*) Exploitable yield is estimated total divertible fresh and marginal water taking account of technical factors but not economic, environmental or social constraints. (*b*) Urban, industrial and agricultural uses of water only. In-stream uses such as hydro-electric generation are not included.

NOTE: n.s.=not significant.

Water quality

The quality of surface water in Australia varies greatly and is controlled by climate, geology, stream flow rates, biological activity and land use. Most of the variability is related to water events such as storm flows, floods and drought. Water pollution is generally at a low level compared to other similarly developed countries. The great majority of Australians enjoy domestic, irrigation and recreational waters of good to excellent quality.

Very little is known of the water quality conditions which prevailed prior to European settlement and development in Australia. It is therefore difficult to judge the full impact of urban, agricultural, industrial and mining developments, and the effects that water resource development measures, such as large dams, have had on the quality of the resource. Levels of toxic pollutants have undoubtedly increased, as have the salt and sediment loads of the rivers. While water quality would, at times, have been poor prior to settlement, levels are believed to have generally declined. On the other hand, regulation of major rivers has reduced some of the impacts of floods and droughts.

An increasing appreciation of water quality in recent times has led to improved management. Measurable improvements in water quality over the last decade have resulted from pollution controls in industry and mining, and more effective sewerage treatment. Means of control of pollution from widespread agricultural activity such as problems of salinity and turbidity, are under development.

The major water quality issues and problems faced in Australia are salinity, turbidity, excessive plant and algal growths (eutrophication), and water treatment for small community water supplies. There is also a scarcity of data, information and research on some aspects of water quality and the protection of aquatic species and habitats. Many of the severe pollution problems found in other countries have been avoided in Australia, because of the general absence of highly polluting industries and the location of major cities on or near the coastline enabling ocean disposal of wastes.

Groundwater is an important substitute for surface water in many parts of the country such as in the arid interior where the Great Artesian Basin provides the only reliable continuous supply of water for stock and domestic purposes. This Basin underlies 23 per cent of the continent but the high ratio of sodium to calcium and magnesium ions has an adverse effect on soil structure, rendering it impervious and generally unsuitable for irrigation.

Groundwater is increasing in importance as a source of water for irrigation, industry and domestic supply. Following measurements taken in 1983–84, divertible resources and abstraction of groundwaters in the twelve drainage divisions are shown below.

GROUNDWATER ESTIMATES OF DIVERTIBLE RESOURCES AND ABSTRACTION BY DRAINAGE DIVISIONS, 1983–84
(*Source:* Australian Water Resources Council, 1985)

		Groundwater (teralitres per annum)		
Drainage division		*Divertible groundwater resources (a)*	*Abstraction during 1983–84*	*Abstraction as percentage of divertible groundwater (%)*
I	North-East Coast	2	0.5	29
II	South-East Coast	2	0.4	23
III	Tasmania	0.1	n.s.	—
IV	Murray-Darling	2	0.5	22
V	South Australian Gulf	0.1	n.s.	68
VI	South-West Coast	1	0.3	24
VII	Indian Ocean	0.5	0.1	10
VIII	Timor Sea	3	n.s.	0.5
IX	Gulf of Carpentaria	2	0.1	5
X	Lake Eyre	0.6	0.2	31
XI	Bulloo-Bancannia	0.1	n.s.	—
XII	Western Plateau	1	n.s.	—
Australia		**14.5**	**2.2**	**15**

(*a*) The divertible groundwater resource is the volume of water that can be withdrawn from an aquifer on a sustained basis without depleting the storage; however in practical operation of many groundwater storages 'sustained basis' may mean about 30 years or so, rather than indefinitely.

NOTE: n.s. = not significant

Increasing use is made of conjunctive schemes, for example, where groundwater supplies are tapped to augment surface water or where, as in the Burdekin Delta, groundwater aquifers are artificially recharged during the summer wet season to enable water to be stored at low cost with negligible evaporation.

Total water use or gross water consumed is the water supplied that is not returned to a stream or body of fresh water or diverted for use a second time. The total water use from 1 July 1983 to 30 June 1984 has been estimated to be 14,629 GL corresponding to an overall per capita use of 2,600 litres per day. Of this total, approximately 70 per cent was for irrigation, 21 per cent was for urban/industrial uses and 9 per cent was for other rural water use. Withdrawals for hydro-electric power have not been included. In terms of sources for the water used, by far the largest proportion (over 80 per cent) of water is drawn from surface water. Groundwater sources, although of importance in some regions, account for only a minor percentage of the water used.

PURPOSES OF WATER USE, 1983–84
(Gigalitres)
(*Source*: Australian Water Resources Council, 1985)

	Irrigation				*Urban/Industrial*					
Drainage division	*Pasture*	*Crops*	*Horticulture*	*Total*	*Domestic*	*Industrial*	*Commercial*	*Total*	*Rural*	*Total use*
North-East Coast	70	803	92	966	353	147	41	542	149	1,657
South-East Coast	711	137	176	1,024	747	385	228	1,360	144	2,528
Tasmania	46	47	4	97	33	23	10	66	11	174
Murray-Darling	4,120	2,436	1,088	7,644	225	55	47	327	683	8,655
South Australian Gulf	28	2	45	76	141	24	34	198	38	312
South-West Coast	168	23	75	266	211	74	97	382	30	678
Indian Ocean	ns	2	7	9	24	17	6	48	8	64
Timor Sea	20	46	5	70	23	12	6	42	16	128
Gulf of Carpentaria	17	45	13	74	15	38	4	57	113	244
Lake Eyre	—	—	—	—	10	4	5	19	113	131
Bulloo-Bancannia	—	—	—	—	n.s.	n.s.	—	n.s.	18	18
Western Plateau	—	n.s.	n.s.	n.s.	9	9	3	21	19	41
Australia	**5,180**	**3,541**	**1,505**	**10,226**	**1,791**	**790**	**481**	**3,062**	**1,342**	**14,629**

NOTE: n.s. = not significant.

Major dams and reservoirs

A *Register of Large Dams in Australia* was published by the Australian National Committee on Large Dams in December 1982. The publication included, in chronological order, all large dams completed or under construction up to December 1982. In the list below, only dams with a gross reservoir capacity of more than 100 GL have been included. The list is based on the above publication and supplementary data for the latest years.

MAJOR DAMS AND RESERVOIRS IN AUSTRALIA

Name and year of completion	*Location*	*Gross capacity (gigalitres) (a)*	*Height of wall (metres) (b)*	*Purpose*
		NEW SOUTH WALES		
Eucumbene (1958)	Eucumbene River	4,798	116	H/E, IR, R, U
Hume (1936, 1961)	Murray River, near Albury	3,038	51	H/E, IR, R, U
Warragamba (1960)	Warragamba River	2,057	137	H/E, U
Menindee Lakes (1960)	Darling River, near Menindee	1,794	18	IR, R, U
Burrendong (1967)	Macquarie River, near Wellington	1,678	76	F/C, IR, R, U
Blowering (1968)	Tumut River	1,628	112	H/E, IR, R
Copeton (1976)	Gwydir River	1,364	113	IR, R, U
Wyangala (1936, 1971)	Lachlan River	1,220	85	IR, R
Burrinjuck (1927, 1956)	Murrumbidgee River	1,026	79	IR, R
Talbingo (1971)	Tumut River	921	162	H/E, IR,R,U
Glenbawn Dam (1958, 1987)	Hunter River, near Scone	870	100	F/C, IN, IR, R, U
Jindabyne (1967)	Snowy River	688	72	H/E, IR, R, U
Lake Victoria (1928)	Murray River, near S.A. border	680	–	IR, R, U
Keepit (1960)	Namoi River, near Tamworth	423	55	F/C, IR, U
Split Rock (1986)	Manilla River, Namoi Valley	370	64	IR
Windamere (1984)	Cudgegong River, near Mudgee	368	69	IR
Glennies Creek (1983)	Hunter Valley, near Singleton	284	65	IN, IR, R, U
Tantangara (1960)	Murrumbidgee River	254	45	H/E, IR, R, U
Avon (1927)	Avon River	214	72	U
Mangrove Creek (1983)	Mangrove Creek, near Gosford	170	80	U
Grahamstown (1969)	Grahamstown, near Newcastle	153	12	IN, U
Lake Brewster (1952)	Lachlan River, near Hillston	150	–	IR, R
Liddell (1968)	Gardiner Creek, near Muswellbrook	148	43	IN
Tallowa (1977)	Shoalhaven River, near Nowra	115	43	U
Googong (1978)	Queanbeyan River	125	62	U, F/C

MAJOR DAMS AND RESERVOIRS IN AUSTRALIA—*continued*

Name and year of completion	*Location*	*Gross capacity (gigalitres) (a)*	*Height of wall (metres) (b)*	*Purpose*
VICTORIA				
Dartmouth (1979)	Mitta Mitta River	4,000	180	F/C, H/E, IN, IR, R
Eildon (1927, 1955)	Upper Goulburn River	3,390	79	F/C, H/E, IN, IR, R
Thomson (1984)	Thomson River, near Moe	1,175	164	IR, U
Waranga (1910)	Near Rushworth (Swamp)	411	12	IR, U
Mokoan (1971)	Winton Swamp, near Benalla	365	10	IR
Rocklands (1953)	Glenelg River	348	28	R, U
Eppalock (1964)	Campaspe River	312	45	IR, U
Cardinia (1973)	Cardinia Creek, near Melbourne	289	86	U
Upper Yarra (1957)	Yarra River	207	89	U
Blue Rock (1984)	Tanjil River, near Moe	198	75	IN, U
Glenmaggie (1927, 1958)	Macalister River	190	37	IR
Cairn Curran (1958)	Loddon River, near Maryborough	148	44	IR
Yarrawonga (1939)	Murray River	117	22	IR
Toolondo (1952, 1960)	Natural depression, near Horsham	107	–	IR, R
Winneke (1980)	Sugarloaf Creek, near Melbourne	100	89	U
QUEENSLAND				
Burdekin (1986)	Burdekin River, near Townsville	1,860	55	IR, U
Fairbairn (1972)	Nogoa River, near Emerald	1,440	49	IN, IR, U
Wivenhoe (1985)	Brisbane River, near Ipswich	1,150	59	F/C, H/E, U
Somerset (1959)	Stanley River, near Esk	866	50	U
Fred Haigh (1975)	Kolan River, near Gin Gin	586	52	IR
Ross River (1974)	Near Townsville	417	35	F/C, U
Tinaroo Falls (1958)	Barron River, near Mareeba	407	47	H/E, IR
Awoonga High Dam (1985)	Boyne River, near Gladstone	250	45	IN, U
Glenlyon (1976)	Pike Creek, near Stanthorpe	261	62	IR
Boondooma (1983)	Boyne River, near Proston	212	64	IN, IR
North Pine (1975)	North Pine, near Brisbane	205	44	U
Koombooloomba (1961)	Tully River, near Innisfail	212	52	H/E
Wuruma (1968)	Nogo River, near Eidsvold	194	46	IR
Eungella (1969)	Broken River, near Eungella	131	49	IN, U, IR
Callide Dam (Stage 11) (1986)	Callide Creek, near Bileola	127	35	IR, U, IN
Julius (1977)	Leichhardt River, near Mt Isa	127	35	IN, U
Leslie Dam (Stage II) (1985)	Sandy Creek, near Warwick	108	34	IR, U
Lake Moondarra (1957)	Leichhardt River, near Mt Isa	107	27	IN, U
Beardmore (1972)	Balonne River, near St George	101	17	IR, R, U
WESTERN AUSTRALIA				
Lake Argyle (Ord) (1971)	Ord River, near Kununurra	5,797	99	F/C, H/E, IR
South Dandalup (1973)	Near Pinjarra	208	43	U
Wellington (1933, 1944, 1960)	Collie River	185	37	IR, R
Serpentine (1961)	Serpentine River	185	55	U
Harding (1985)	Harding River, Pilbara	114	42	IN,U
TASMANIA				
Lakes Gordon and Pedder (1974)—				
Gordon	South West	11,316	140	H/E
Scotts Peak		2,960	43	
Serpentine			38	
Edgar			17	
Miena (1967)	Great Lake	3,356	28	H/E
Lake St Clair (1938)	Central Plateau	2,000(est.)	3	H/E
Mackintosh (1981)	Mackintosh River, near Queenstown	949	75	H/E
Tullibardine (1981)	Tullibardine River, near Queenstown		25	

MAJOR DAMS AND RESERVOIRS IN AUSTRALIA—*continued*

Name and year of completion	*Location*	*Gross capacity (gigalitres) (a)*	*Height of wall (metres) (b)*	*Purpose*
	TASMANIA—*continued*			
Lake Echo (1956)	Lake Echo	725	19	H/E
Lower Pieman	Pieman River, near Queenstown	641	122	H/E
Arthur's Lake (1965)	Source of Lake River, near Great Lake	511	17	H/E
Lake King William (Clark) (1949, 1966)	Derwent River	541	67	H/E
Devils Gate (1969)	Forth River, near Devonport	180	84	H/E
Rowallan (1967)	Mersey River	131	43	H/E
Bastyan (1983)	Pieman River, near Queenstown	124	75	H/E
Cethana (1971)	Forth River, near Devonport	109	110	H/E
	NORTHERN TERRITORY			
Darwin River (1972)	Darwin River	259	31	U

(*a*) Includes 'dead water', i.e., water below the operational outlet of the reservoir. (*b*) As a general rule, the figures shown for height of wall refer to the vertical distance measured from the lowest point of the general foundation to the crest of the dam, i.e., the level of the roadway or walkway on the dam.

Abbreviations: F/C—Flood control and/or mitigation, H/E—hydro-electricity, IN—Industrial and/or mining, IR—Irrigation R—Rural (stock and domestic), U—Urban supplies.

MAJOR DAMS AND RESERVOIRS UNDER CONSTRUCTION OR PROJECTED

Name	*Location*	*Gross capacity (gigalitre) (a)*	*Height of wall (metres) (b)*	*Purpose*
Crotty Dam	King River, near Queenstown, Tas.	1,091	80	H/E
Proserpine Dam	Proserpine River, near Bowen, Qld	500	45	IR, U
Bjelke Petersen	Barker Creek, near Murgon, Qld	125	33	IR

For footnotes and abbreviations *see* previous table.

Water management

Australia's water resources are managed by a multitude of irrigation authorities, metropolitan water boards, local government councils and private individuals. State authorities dominate the assessment and control of water resources as, under the Commonwealth Constitution, primary responsibility for management of water rests with the individual State governments. The Commonwealth Government is responsible for matters relating to its Territories, and participates indirectly through financial assistance or directly in the co-ordination or operation of interstate projects through bodies such as the River Murray Commission. In other instances where political boundaries intersect some river basins, co-operation between governments has been necessary to develop resources.

Australia's attitudes to water resources management have changed substantially over the last twenty years. Water management is no longer seen just in terms of storing water and regulating streams for consumption, but also in terms of conserving unregulated streams in an unmodified landscape for wild life preservation or recreation purposes or for possible social or economic use by future generations. In addition, agricultural, industrial and urban development has led to greater attention being paid to water quality management.

The development of water resources in the States has an important bearing on the Commonwealth's broad interests in economic management, resource allocation, foreign exchange earnings, distribution of income and related matters. Consequently, the Commonwealth has participated in water resource matters in the States in instances of mutual Commonwealth/States concern or in the national interest.

Commonwealth water policy

In September 1984, the Commonwealth released its new water policy. The objectives are to:

- ensure availability of water, adequate in quantity for all beneficial uses;
- adopt measures which improve the efficiency of water supply and use;
- develop a comprehensive approach to inter-related water and land management issues;
- encourage comprehensive long-term plans for the development and management of water resources;
- implement financial and economic policies which distribute the costs of water supplies equitably and provide incentives for the more economic use of resources at government and individual level.

As part of the new water policy, funds are available to the States and the Northern Territory under a program, the Federal Water Resources Assistance Program (FWRAP), which commenced in 1984–85. Funds are available for purposes which include:

- water resource development or management activities/projects for agriculture, urban or industrial purposes;
- floodplain management;
- collaborative information programs;
- salinity reduction and land drainage;
- State-wide and broad regional water plans;
- public education.

The Country Towns Water Supply Improvement Program, which commenced under the Community Employment Program, has been continued as a sub-program of FWRAP.

Research and continuing assessment of water resources

Australian Water Resources Council—AWRC

The AWRC was established in 1963 by joint action of the Commonwealth and State Governments. The Council consists of the Commonwealth, Northern Territory and State Ministers who have primary responsibility for water resources; it is chaired by the Commonwealth Minister for Primary Industries and Energy.

The Council provides a forum for the water industry. With the shift in emphasis that has occurred in the water industry in recent years from water resource development to resource management and the growing importance of urban water issues generally, the AWRC is extending its scope to focus on industry-wide issues such as pricing and financial policies, resource management, technology and organisational management and strategy. The Council's terms of reference also include the promotion of programs to assess Australia's water resources, the encouragement of education and training in hydrology, the co-ordination and dissemination of information, the promotion of water research, and development of liaison with overseas and international organisations in the field of water resources.

The Council is supported by a Standing Committee, comprising permanent heads of relevant State authorities and the Commonwealth Department of Primary Industries and Energy. CSIRO and the Bureau of Meteorology are also represented and Ministers can nominate additional representatives in accordance with the requirements of the agenda for each meeting.

Following a review held in late 1984, the Standing Committee is now serviced by four advisory committees which consider issues in water industry planning, surface water and catchments, groundwater and water technology. The Council can also establish ad hoc task groups, for advice on particular topics, and is currently being assisted by an Expert Panel on Education and Training, and a National Co-ordinating Committee on Aquatic Weeds.

Water resources assessment

In 1964, in response to a perceived lack of water resources data throughout much of Australia, the Commonwealth Government instituted, through the AWRC, the National Water Resources Assessment Program. The original aim was to expand the stream gauging network in Australia and increase the level of information on groundwater. In 1974, the collection of water quality data was added to the program. The program has been successful in filling many of the data gaps which existed prior to 1964, in providing data and information for water resources planning, construction projects and in the development of the understanding of the nature and function of Australia's water resources. Commonwealth involvement in this program has now ceased. However data collection programs, involving co-operation between Commonwealth and State authorities are continuing in the Murray Basin.

Water resources research

The Department of Primary Industries and Energy is responsible for Commonwealth interests in water resource matters, including research policy and co-ordination.

A water research program was funded and administered on behalf of the Australian Water Resources Council from 1968 until 1984. In June 1985, the Australian Water Research Advisory Council (AWRAC) was established to advise on national water research needs and on a Commonwealth funded program of water research. Funds totalling $3.4 million were allocated in 1986–87 to research programs recommended by AWRAC. Projects included work on salinity, groundwater, stream ecology, water management, water treatment and quality, hydrology and soil/plant water relations; fellowships; and activities to effectively disseminate the results of research. The Murray-Darling Freshwater Research Centre at Albury and the Urban Water Research Association also received financial support.

Water research is undertaken at the Commonwealth level by CSIRO; the Bureau of Meteorology; the Australian Nuclear, Science and Technology Organisation (ANSTO)the Bureau of Mineral Resources, Geology and Geophysics (BMR); and the Alligator Rivers Regional Research Institute (ARRRI). The water research programs of these major national agencies are co-ordinated through a Water Research Liaison Committee which advises the Ministers of Primary Industries and Energy and of Science and Technology on water research in Commonwealth Government agencies.

At the State level, water agencies have extensive laboratory facilities for water quality testing. However, most water related research is undertaken in research centres associated with agriculture, fisheries, forestry and environmental authorities. At the regional level, some of the larger authorities providing water supply and sewerage services undertake applied research on a very limited scale.

A significant proportion of Australian water research is undertaken by researchers in tertiary education institutions with the aid of either internal funding or grants from outside bodies, such as AWRAC or the Australian Research Grants Committee. Water research is carried out within a range of disciplines, including the biological and social sciences and engineering.

International aspects

International water organisations

Australia liaises with international bodies and United Nations agencies concerned with water resources and participates in their activities in various ways.

Economic and Social Commission for Asia and the Pacific—ESCAP

This United Nations Commission, through its Committee on Natural Resources, reports on water policy issues in addition to other activities. By participating in this forum and in seminars arranged on selected topics, Australia contributes to, and benefits from, identification of and discussions on the main problems of water resources management in a densely populated, developing region. Australia is also an active participant in ESCAP's water information exchange system and a contributor to ESCAP's Water Resources Journal and its newsletter, *Confluence*.

Organisation for Economic Co-operation and Development—OECD

Australia's membership of the OECD since 1970 has involved participation in the work of the Environment Committee, particularly the Natural Resource Management Group, the Water Management Group and its Group of Economic Experts, which investigates problems which are the subject of international concern and the development of strategies to resolve them.

United Nations Educational, Scientific and Cultural Organization—UNESCO

Australia has contributed to the international program designed to advance the science and practice of hydrology and the International Hydrology Program (IHP), through an Australian UNESCO Committee for the IHP. Australia is a member of the Inter-governmental Council for IHP.

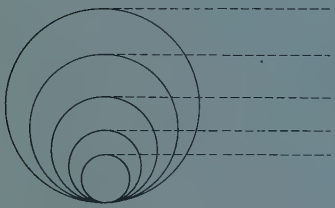
MEAN ANNUAL RUNOFF OF FRESH SURFACE WATER
Estimated for Drainage Basins

millimetres*

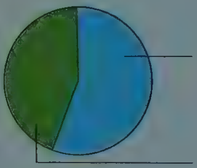
▨	0
▨	1–10
▨	10–100
▨	100–500
▨	500–1000
▨	More than 1000

Fresh surface water contains less than 1000 milligrams per litre of dissolved solids

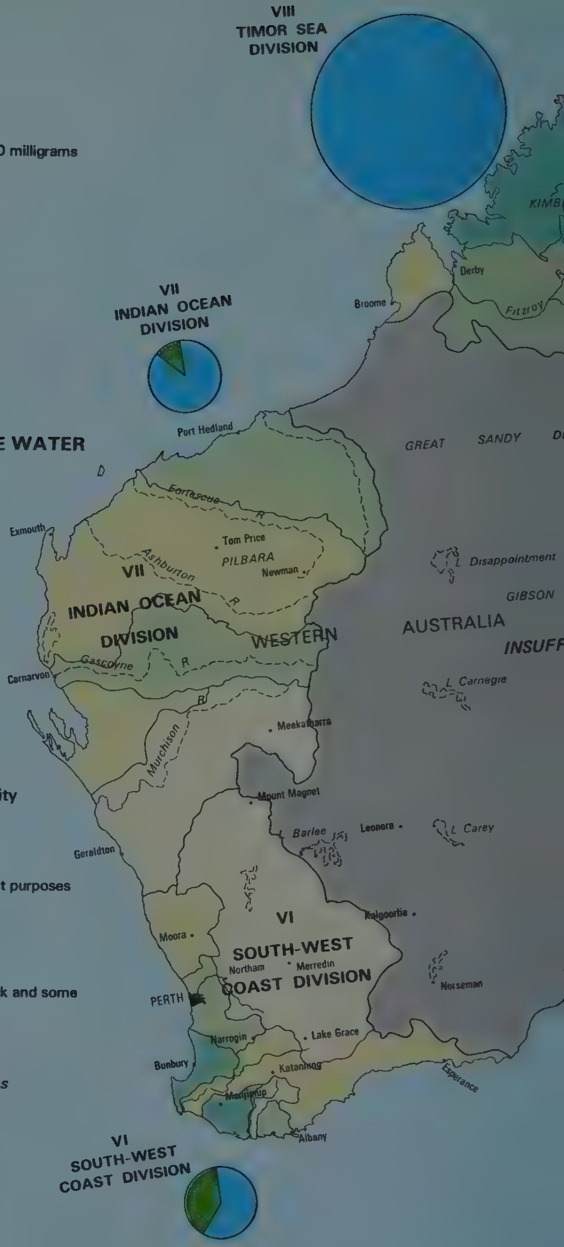
MEAN ANNUAL QUANTITY AND QUALITY OF ALL SURFACE WATER
Estimated for Drainage Divisions


Quantity
Thousand megalitres
More than 80 000
30 000 –60 000
10 000–30 000
2000–10 000
1000 or less

Quality	Total Dissolved Solids milligrams per litre		Suitability
	Less than 1000	Fresh	Suitable for most purposes
	More than 1000	Brackish and saline	Suitable for stock and some other purposes



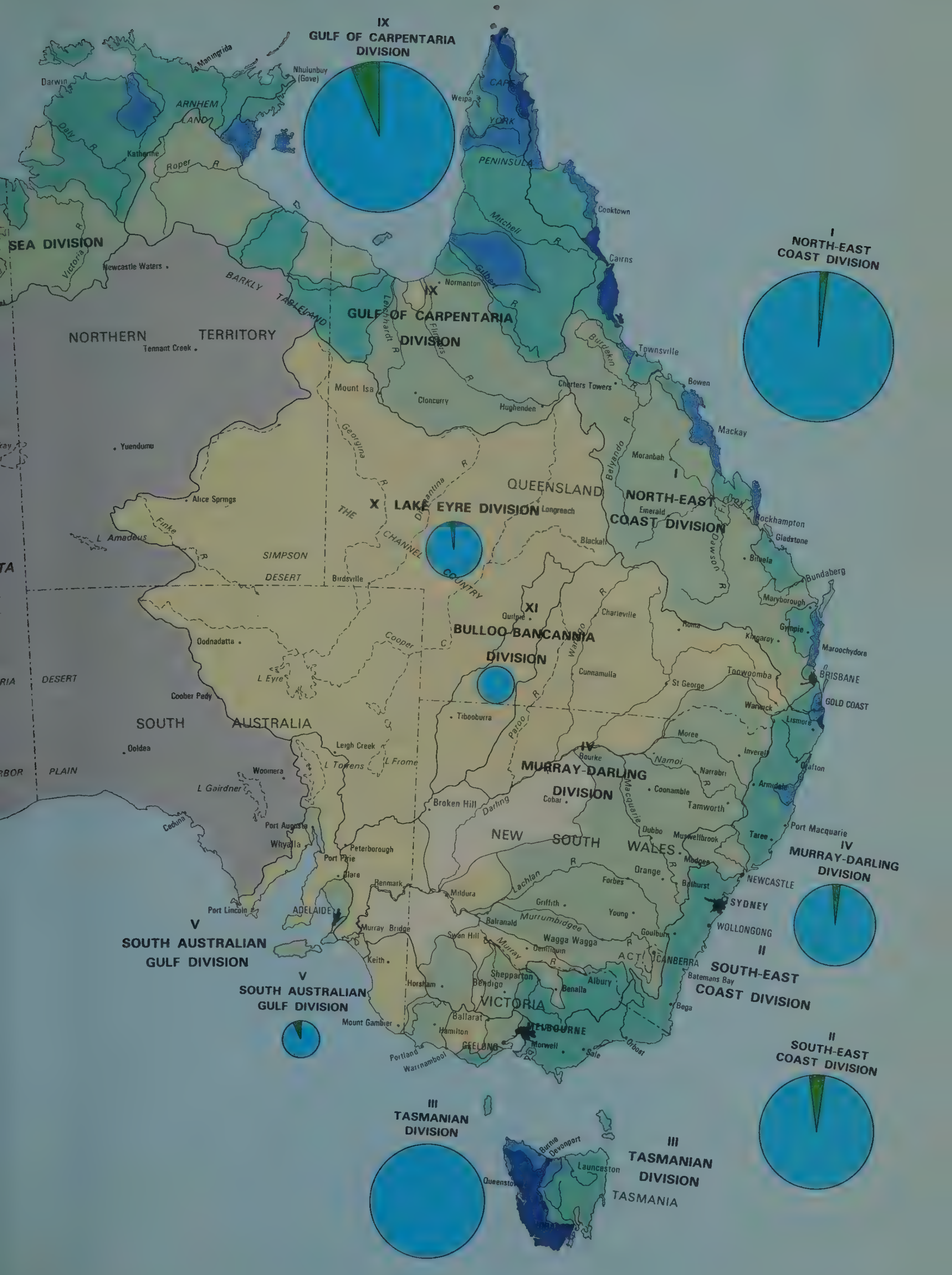
SOURCE: *Water 2000: A Perspective on Australia's Water Resources to the year 2000,* Department of Resources and Energy, 1983.

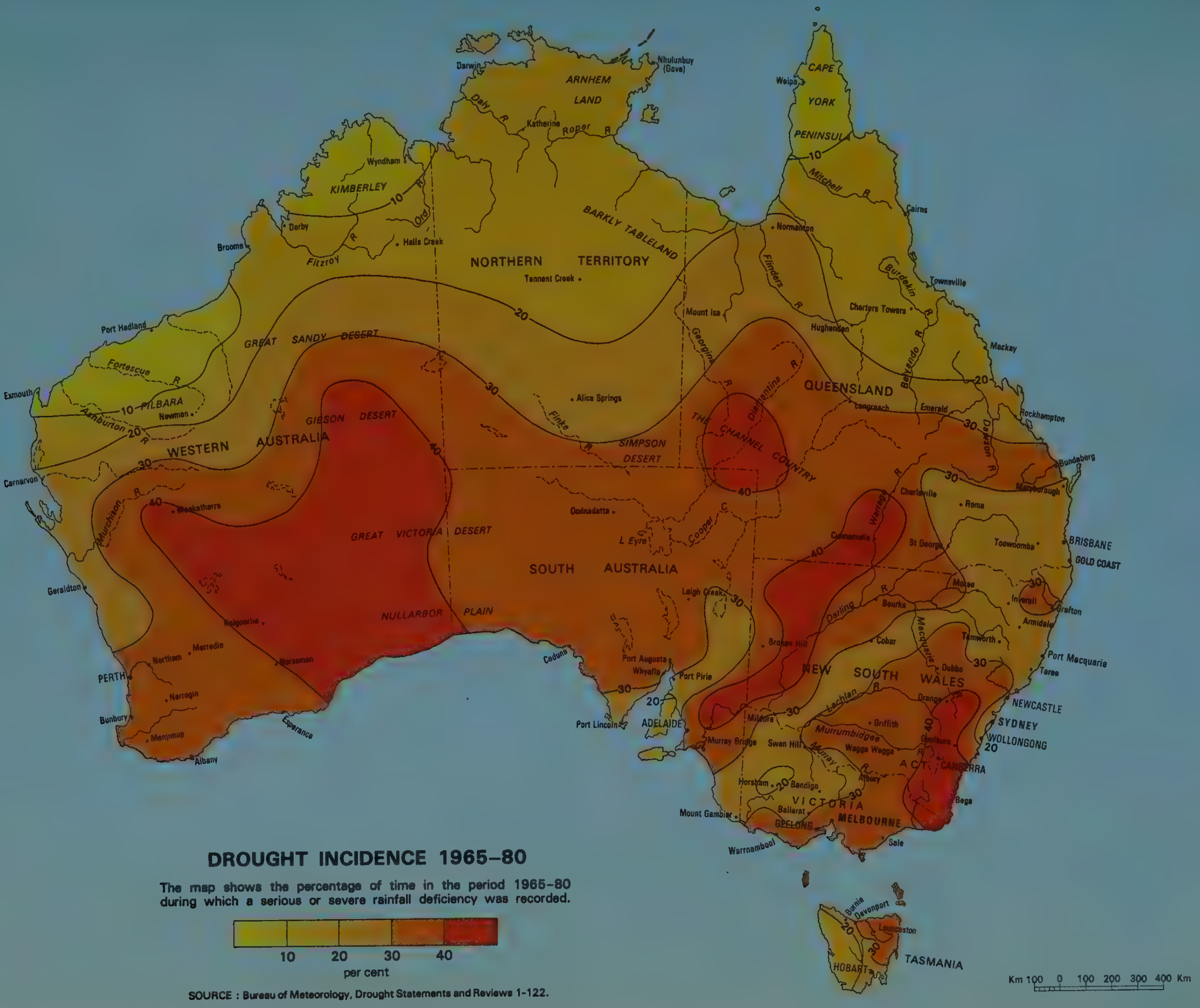

VIII
TIMOR SEA
DIVISION
KIMB
Derby
Fitzroy
Broome
VII
INDIAN OCEAN
DIVISION
Port Hedland
GREAT
SANDY
D
D
Fortescue
R
Exmouth
Tom Price
PILBARA
Newman
Ashburton
R
VII
INDIAN OCEAN
DIVISION
WESTERN
AUSTRALIA
L Disappointment
GIBSON
INSUFF
Gascoyne
R
Carnarvon
B
L Carnegie
Meekatharra
Murchison
Mount Magnet
Barlee
Leonora
L Carey
Geraldton
Kalgoorlie
VI
SOUTH-WEST
COAST DIVISION
Moora
Northam
Merredin
Norseman
PERTH
Narrogin
Lake Grace
Bunbury
Katanning
Esperance
Manjimup
Albany
VI
SOUTH-WEST
COAST DIVISION

SURFACE WATER QUANTITY AND QUALITY

Kilometres 100 0 100 200 300 400 Kilometres

NATMAP


IX
GULF OF CARPENTARIA
DIVISION
Darwin
Maningrida
Nhulunbuy (Gove)
ARNHEM
LAND
Daly R
Katherine
Roper R
SEA DIVISION
Victoria R
Newcastle Waters
BARKLY TABLELAND
NORTHERN TERRITORY
Tennant Creek
Weipa
CAPE
YORK
PENINSULA
Cooktown
Mitchell R
Gilbert R
Cairns
Normanton
IX
GULF OF CARPENTARIA
DIVISION
Leichhardt R
Flinders R
Burdekin R
Townsville
Bowen
Mount Isa
Cloncurry
Hughenden
Charters Towers
Mackay
I
NORTH-EAST
COAST DIVISION
Yuendumu
Georgina R
Diamantina R
Belyando R
Moranbah
QUEENSLAND
X LAKE EYRE DIVISION
Longreach
I
NORTH-EAST
COAST DIVISION
Emerald
Fitzroy R
Rockhampton
Gladstone
Alice Springs
Finke R
L Amadeus
SIMPSON
DESERT
THE
CHANNEL
COUNTRY
Blackall
Dawson R
Biloela
Bundaberg
Birdsville
Maryborough
XI
Quilpie
Charleville
BULLOO-BANCANNIA
DIVISION
Warrego R
Roma
Gympie
Kingaroy
Maroochydore
Oodnadatta
Cooper C
L Eyre
Cunnamulla
Toowoomba
BRISBANE
St George
DESERT
Coober Pedy
Warwick
GOLD COAST
SOUTH
AUSTRALIA
Tibooburra
Paroo R
Lismore
Moree
Ooldea
Leigh Creek
L Torrens
L Frome
IV
Bourke
Inverell
PLAIN
Woomera
MURRAY-DARLING
DIVISION
Namoi
Narrabri R
Grafton
L Gairdner
Cobar
Macquarie
Coonabble
Armidale
Broken Hill
Darling
Tamworth
Ceduna
Port Augusta
Whyalla
NEW SOUTH WALES
Dubbo
Muswellbrook
Port Macquarie
Taree
IV
MURRAY-DARLING
DIVISION
Peterborough
Port Pirie
Clare
Orange
Mudgee
Forbes
Bathurst
Lachlan R
NEWCASTLE
Renmark
Mildura
Griffith
SYDNEY
Young
Port Lincoln
ADELAIDE
V
SOUTH AUSTRALIAN
GULF DIVISION
Murray Bridge
Balranald
Murrumbidgee
WOLLONGONG
Goulburn
Swan Hill
Wagga Wagga
Deniliquin
Murray R
ACT
CANBERRA
II
SOUTH-EAST
COAST DIVISION
Batemans Bay
Keith
V
SOUTH AUSTRALIAN
GULF DIVISION
Horsham
Bendigo
Shepparton
Benalla
Albury
VICTORIA
Bega
Mount Gambier
Ballarat
Hamilton
MELBOURNE
Portland
Warrnambool
GEELONG
Morwell
Sale
Orbost
II
SOUTH-EAST
COAST DIVISION
III
TASMANIAN
DIVISION
Burnie
Devonport
Launceston
Queenstown
III
TASMANIAN
DIVISION
TASMANIA



ARNHEM LAND
CAPE YORK PENINSULA
KIMBERLEY
BARKLY TABLELAND
NORTHERN TERRITORY
QUEENSLAND
WESTERN AUSTRALIA
SOUTH AUSTRALIA
NEW SOUTH WALES
VICTORIA
A.C.T.
TASMANIA
GREAT SANDY DESERT
GIBSON DESERT
GREAT VICTORIA DESERT
NULLARBOR PLAIN
SIMPSON DESERT
THE CHANNEL COUNTRY
PILBARA
Darwin
Nhulunbuy (Gove)
Katherine
Weipa
Cairns
Townsville
Charters Towers
Hughenden
Normanton
Mount Isa
Mackay
Rockhampton
Bundaberg
Maryborough
BRISBANE
GOLD COAST
Toowoomba
Roma
Charleville
Longreach
Emerald
St George
Moree
Inverell
Grafton
Armidale
Tamworth
Port Macquarie
Taree
NEWCASTLE
SYDNEY
WOLLONGONG
CANBERRA
Goulburn
Orange
Dubbo
Bourke
Cobar
Cunnamulla
Broken Hill
Griffith
Wagga Wagga
Albury
Mildura
Swan Hill
Bendigo
Horsham
Ballarat
GEELONG
MELBOURNE
Sale
Bega
Warrnambool
Mount Gambier
Murray Bridge
ADELAIDE
Port Pirie
Port Augusta
Whyalla
Port Lincoln
Ceduna
Leigh Creek
Oodnadatta
L Eyre
Alice Springs
Tennant Creek
Halls Creek
Wyndham
Derby
Broome
Port Hedland
Newman
Exmouth
Carnarvon
Meekatharra
Geraldton
Kalgoorlie
Norseman
Merredin
Northam
PERTH
Narrogin
Bunbury
Manjimup
Albany
Esperance
Burnie
Devonport
Launceston
HOBART
Daly R
Roper R
Ord R
Fitzroy R
Fortescue R
Ashburton R
Murchison R
Mitchell R
Flinders R
Burdekin R
Belyando R
Dawson R
Georgina R
Diamantina R
Finke R
Cooper C
Warrego R
Darling R
Macquarie R
Lachlan R
Murrumbidgee R
Murray R
10
20
30
40
Km 100 0 100 200 300 400 Km
10 20 30 40
per cent

DROUGHT INCIDENCE 1965–80

The map shows the percentage of time in the period 1965–80 during which a serious or severe rainfall deficiency was recorded.

SOURCE : Bureau of Meteorology, Drought Statements and Reviews 1-122.

NATMAP

NMP 86/008.11

World Meteorological Organization—WMO

Through its Commission for Hydrology, WMO is the specialised UN agency dealing with operational hydrology—the measurement of basic hydrological elements, water resources assessment and hydrological forecasting. WMO has an Operational Hydrology Program (OHP) which is co-ordinated with and complemented by UNESCO's IHP. Within the OHP is the Hydrological Operational Multipurpose Subprogram (HOMS) involving the organised transfer of hydrological technology among members. Australia is a contributor to HOMS and has established a HOMS National Reference Centre within the Secretariat of AWRC. In Australia, hydrological and meteorological activities relative to water resources are co-ordinated by the Secretary of the AWRC as hydrological advisor to the Permanent Representative of WMO in Australia, the Director of Meteorology.

United Nations Environment Program—UNEP

Australia participates in a world registry of major rivers covering discharge and pollutants and of clean rivers so defined and in the development of methodology for analysis and planning of water resources management.

World Health Organisation—WHO

Australia is participating in the water quality monitoring component of the WHO Global Environmental Monitoring System (GEMS) which provides a consistent global overview of changes in water quality.

National and interstate agreements

In the section on water management above, reference was made to the responsibilities of government on the national, State and local authority levels. In this section, some additional details are provided on their roles in the management of water resources.

The flows of many of the tributaries to the River Murray which make up the Murray-Darling Basin have been regulated for irrigation and water supply purposes. Approximately 27 GL of storage has been constructed in the Murray-Darling basin. Of this, about 12 GL of storage has been constructed along the River Murray, including the barrages, locks and weirs. With an average annual diversion from the Murray of approximately 4 GL, the degree of resource utilisation is only approximately 40 per cent.

River Murray Waters Agreement

The *River Murray Waters Act 1915* ratified an Agreement between the Commonwealth and the States of New South Wales, Victoria and South Australia. *Year Books* prior to No. 39 contain a number of summaries of the historical events leading to the Agreement of 1914 which provided for a minimum quantity of water to pass to South Australia. Further details on the River Murray Waters Agreement and subsequent amendments may be found in *Year Book* No. 61, pages 870–2.

The River Murray Commission, established in 1917 to give effect to the Agreement, is responsible for the management of the flow of water in the River Murray, the construction, maintenance and operation of storages and other regulatory works to make water available for irrigation, navigation, stock and urban purposes; and for the allocation of water between the States of New South Wales, Victoria and South Australia. It also has responsibility for management of the catchment above Hume Dam and for the management of the flow of water in the Darling River below Menindee Lakes.

Dartmouth and Hume Reservoirs, together with Lake Victoria and the Menindee Lakes storages, are the key storages operated by the River Murray Commission to regulate the River Murray system. A series of weirs along the river provide for irrigation diversions and pumping facilities by the three States. The major diversion weir is at Yarrawonga. All of the weirs except Yarrawonga have locks to enable navigation of the river to be maintained.

A new River Murray Waters Agreement, which was approved by legislation and proclaimed by the four Governments on 1 February 1984, broadened the role of the River Murray Commission to allow for more direct and independent action in the management of the Murray. The 1984 Agreement enables the Commission to consider water quality, recreation, flood mitigation and environmental issues in relation to the management of the river system, in addition to its traditional role.

In relation to water quality, the Commission is authorised to:

- initiate proposals for the protection or improvement of River Murray water quality;
- co-ordinate or carry out investigations and studies into the feasibility of works or measures for the improved conservation and regulation of the waters of the River Murray, to protect or improve its quality;
- measure and monitor water quality of the waters of the Murray and its tributaries;
- formulate water quality objectives and recommend water quality standards for adoption by the contracting governments;
- make recommendations to contracting governments or any authority, agency or tribunal on any matter which may affect the quality or quantity of the River Murray waters.

A particular feature of the 1984 Agreement is that the State contracting governments are required to advise the Commission of any proposal within their States which could significantly affect the quality and quantity of the River Murray waters.

The Agreement enables the Commission to clearly define the principles of water sharing laid down in the original Agreement; to enable a water accounting system to be introduced and to carry out river protection works and remedial works (including salinity mitigation works) where the need arises. The Commission can also recommend future amendments to the Agreement.

As part of the initiative launched in 1985 by the Commonwealth and the States of New South Wales, Victoria and South Australia to achieve improved management of the natural resources of the Murray-Darling Basin consideration is being given to the establishment of a Murray-Darling Basin Commission to replace the River Murray Commission. The new Commission would encompass the regulatory responsibilities currently provided for under the River Murray Waters Agreement as well as responsibilities for land, environmental and water matters not covered in the Agreement.

New South Wales–Queensland Border Rivers Agreement

As a result of an Agreement between the Premiers of Queensland and New South Wales, Acts were passed by the Parliaments of both States in 1946 and 1947 respectively, establishing the Dumaresq–Barwon, Border Rivers Commission. The Commission is responsible for the conservation and equal sharing of the waters of the Dumaresq River upstream of Mingoola, the regulation of the border rivers downstream of Mingoola and the equitable distribution of the waters of the streams which intersect the Queensland–New South Wales border west of Mungindi.

The duties of the Commission include measurement of stream flows; investigation of proposals for better conservation, regulation and distribution of water resources; and construction and maintenance of dams, weirs, regulators or other works for the storage, regulation and distribution of flows.

The Commission has constructed Glenlyon Dam on Pike Creek in Queensland which has a storage capacity of 261 GL, and a number of regulators and other water distributory works on the river systems under its control.

Snowy Mountains Hydro-electric Scheme

The Snowy Mountains Scheme is a dual purpose hydro-electric and irrigation complex located in south-eastern Australia and on its completion was one of the largest engineering works of its type in the world. It impounds the south-flowing waters of the Snowy River and its tributary, the Eucumbene, at high elevations and diverts them inland to the Murray and Murrumbidgee rivers through two tunnel systems driven through the Snowy Mountains. The Scheme also involves the regulation and utilisation of the headwaters of the Murrumbidgee, Tumut, Tooma and Geehi rivers.

The Scheme was designed and constructed by the Snowy Mountains Hydro-electric Authority, a statutory body established by the Commonwealth Government in 1949, and was substantially completed by 1974. Its installed generating capacity is 3,740 MW and its average annual electricity output is over 5,000 GWh. An average of 2,300 GL of water per year has become available for irrigation in the Murray and Murrumbidgee rivers as a result of the Scheme.

Details of the Scheme are given in a special article, included in *Year Book* No. 70, pages 430–6.

The Snowy Mountains Council, constituted of representatives of the Governments of the Commonwealth, New South Wales and Victoria and the Snowy Mountains Hydro-electric Authority, was established on 2 January 1959. Its main functions are to direct and control the operation and maintenance of the permanent works of the Snowy Mountains Scheme, in particular the control of water and the allocation of loads to generating stations.

States and Territories

The foregoing text deals with water conservation and irrigation in Australia generally and with international, national and interstate aspects. The following material covers the local pattern of water resources and the steps taken by the State governments to bring about their development. In the various States, water policies tend to assume a distinctive and characteristic pattern closely allied with climatic conditions and specific local needs.

In Victoria, almost every form of water scheme is in operation. In New South Wales, the management of irrigation water supplies is an area of major emphasis, with approximately two-thirds of a million hectares under irrigation. In Queensland, up to the present, the predominant emphasis has fallen on water (mainly underground sources) for stock and the development of small irrigation schemes in sub-humid and humid areas, principally to stabilise production of such crops as tobacco, sugar, cotton and pastures. Apart from regular irrigation practices along the Murray River, South Australian authorities are vitally concerned with reticulated supplies for rural areas and towns. Western Australia has developed unique rock catchments and piped supplies for agricultural areas and towns in dry districts. Tasmanian interest relates almost exclusively to hydro-electric generation. The Northern Territory is concerned primarily with water supplies for population centres and mining and pastoral industries.

New South Wales

Administration

The New South Wales Department of Water Resources was set up in 1987, superseding the previous Water Resources Commission. Its main responsibilities are to co-ordinate policies and programs of all State and local government authorities providing water supplies and other water services; to plan for future water needs; and to operate the rural water supply network, control the use of both surface water and groundwater resources through a licensing system, provide floodplain management and flood mitigation services in non-tidal areas, maintain water resources assessment programmes, and maintain stable river channels.

Water use

In New South Wales, about 14 per cent of all consumptive use of water is by Newcastle-Sydney-Wollongong. By far the largest category of total use in the State is irrigation (74 per cent), while farm uses other than irrigation make up a large part of the remaining 12 per cent.

Urban water

Water supply for Sydney-Wollongong is drawn from seven main storage dams and several smaller storages in the catchments of the Hawkesbury, Georges and Shoalhaven Rivers. Newcastle's water is taken from two storage dams and from groundwater in extensive coastal sand beds. Country towns are serviced variously by dams built specifically for their purposes, by run-of-river pumping, by pumping from rivers in which flows are regulated by irrigation dams, and by groundwater extractions.

Irrigation

The bulk of irrigation development is from rivers of the Murray–Darling Basin, on the inland side of the Great Dividing Range, where both landforms and climate are conducive to large-scale irrigation. Regulated water supplies are provided from twenty-four main storages, including four shared with Victoria and South Australia, and one shared with Queensland.

There are two principal irrigation arrangements. One is licensed irrigation, practised State-wide, in which licensees take water from rivers, usually by pumping, with works constructed by themselves at their own cost. Licensed irrigators use on average 1.5 million ML of water annually. The other is irrigation in nine Irrigation Areas and ten Irrigation Districts, all located along the three most southern inland rivers—the Murray, Murrumbidgee and Lachlan.

The Irrigation Areas and Districts contain over 6,000 individual farms and holdings covering nearly 1.4 million hectares. About half a million hectares is usually irrigated, using 2.8 TL of water. An increasingly used source of water for irrigation is the groundwater in alluvial deposits, mostly in the inland. Extractions from licensed high-yielding bores now approach 300 GL a year.

The annual gross value of production from irrigation is of the order of $750 million—about 20 per cent of the State's total agricultural production—although little more than 1 per cent of all agricultural land is irrigated.

Future program

With large dams on all main inland rivers, there is little prospect of further major irrigation storage construction in the foreseeable future after completion of Split Rock Dam. Attention is to be focussed on improved management and efficiency in water supply and water use, checking and correcting developing problem areas through both management and physical works, and taking stock of the water needs of the natural environment.

Possibilities for greater water efficiency include additional small re-regulating storages along controlled rivers, improved delivery systems, loss reduction and reduction of waste in end-use both in urban areas and on-farm. Increased flexibility is being provided for irrigators through water entitlement transfers and other management measures to enable economic optimisation of production.

Waterlogging and salinisation of farming lands will continue to be addressed by both physical works and management measures. Aging infrastructure works are also to receive attention with modernisation and replacement, while the program of floodplain management and flood mitigation will be continued. Water management procedures in aquatic environments (with first emphasis on wetlands) could be amended following studies currently under way.

Victoria

Administration

Water resources in Victoria are administered by three major agencies, the Department of Water Resources, the Melbourne Metropolitan Board of Works and the Rural Water Commission. The Department of Water Resources is the central policy and planning agency providing advice to the Minister of Water Resources on matters of State-wide interest. The Melbourne Metropolitan Board of Works is a statutory corporation responsible for providing water, sewerage, main drainage and managing waterways and metropolitan parks for the people of Metropolitan Melbourne. The Rural Water Commission is also a statutory corporation and its primary mission is to manage relevant water and land resources, to provide water, water related services and the necessary infrastructure for irrigation, domestic and stock, commercial, industrial, recreational and environmental uses in non-metropolitan areas of Victoria.

Rural water supply systems

The principal irrigation systems in Victoria are:

- **Goulburn-Campaspe-Loddon.** The main storage is Lake Eildon with a capacity of 3,390 gigalitres. The main products in these systems are dairy products, fruit, wool and fat lambs. Annual production of deciduous canning fruits in the eastern part of the system is about two thirds of Australia's total.
- **Murray River System.** The Murray Valley Irrigation Area and the Torrumbarry Irrigation System are irrigated by water diverted at the Yarrawonga and Torrumbarry Weirs respectively. These areas are devoted mainly to dairying, fat lambs and canning fruit (Murray Valley) and dairying, fat lambs, vineyards, orchards and market gardens

(Swan Hill). Downstream from Swan Hill, the First Mildura Irrigation Trust and four Commission Districts are supplied by pumping, and produce mainly dried vine fruits, citrus fruits, and table and wine grapes.

- **Southern Systems.** The Maffra-Sale-Central Gippsland district, supplied from the Macalister River and regulated by Lake Glenmaggie, is devoted mainly to dairying.
- **Werribee and Bacchus Marsh.** These districts produce fresh fruit, vegetables and dairy products mainly for the local domestic market. Irrigation is supplied from the Werribee River system which is regulated by three main storages: Pykes Creek, Melton Reservoir and Lake Merrimu.
- **Wimmera-Mallee Domestic and Stock Supply System.** Storages in the Grampian Ranges ensure farm water supplies over the riverless pastoral and cereal lands to the Murray. Without this supply, occupation of the region would be extremely hazardous. There are small areas of irrigation supplied from this system near Horsham and Murtoa.

Future programs

Proposed capital works expenditure by the Rural Water Commission continues to place increasing importance on infrastructure replacement and rehabilitation, urban water services, waterways and floodplain management, environmental protection and water quality improvement.

Major provisions in the program include:

- rehabilitation of headworks—Glenmaggie, Coliban, Melton and Cairn Curran;
- provision of urban water services, excluding water boards and sewerage authorities;
- replacement, rehabilitation and extensions of rural water supplies, including drainage, private diversions and salinity control works;
- management of waterways and related lands, floodplain management and control of flood protection districts.

Queensland

Administration

The control of surface and underground water is exercised by the Commissioner of Water Resources on behalf of the Crown through the licensing of all artesian bores, sub-artesian bores within districts declared for the purpose, and works for the conservation and use of surface water together with the issuing of permits for domestic and stock water use.

In respect of the water resources of the State, the Commissioner is required to prepare a complete description and keep a record of naturally occurring surface and underground water; evaluate the present and future requirements for, and plan the development of, those water resources; take steps to protect the resources from factors likely to be detrimental to their quality or diminish their quantity; investigate and survey any natural water resource; co-ordinate the investigation, evaluation and development of plans for the control of floodwaters and mitigation of flood damage; and construct and manage works for the conservation, replenishment, utilisation and distribution of water.

The Commissioner is principally responsible for water conservation and supply for rural purposes including irrigation, domestic and stock supplies but where possible dual or multipurpose use is made of works for irrigation, rural, urban and industrial purposes including power generation and mining.

Summary of schemes

Approximately half of the area irrigated in Queensland now uses water from storages constructed by the Queensland Water Resources Commission. The balance is irrigated from unsupplemented surface or underground supplies spread widely throughout the State. Because of the predominance of irrigation by private diversion from streams, as opposed to channel systems delivering water to farms, most of the storages release water to maintain supplies downstream.

Irrigation areas

Approximately one-third of the area irrigated in Queensland each year is concentrated in eight Irrigation Areas constituted under the Irrigation Act where the supply is generally reticulated by channel systems to the farms.

Irrigation areas	*Location and source of supply*
Dawson Valley	Centred on Theodore. Four weirs on Dawson River.
Burdekin River	South of Townsville. Dams and weirs on the Burdekin River and its tributaries and including the Burdekin Falls Dam.
Mareeba–Dimbulah	Hinterland of Cairns. Tinaroo Falls Dam.
St George	Centred on St George. Beardmore Dam.
Emerald	Centred on Emerald. Fairbairn Dam.
Bundaberg	Centred on Bundaberg. Fred Haigh Dam and barrages on the Kolan and Burnett Rivers together with upstream weirs.
Eton	Hinterland of Mackay. Kinchant Dam supplemented by diversion of water from Pioneer River.
Lower Mary River	Upstream from Maryborough. Borumba Dam and barrages on the Mary River and Tinana Creek.

Irrigation projects

These are schemes established under the *Water Act 1926–1983*, where water is released from storages to maintain supplies for pumping under licence to land adjacent to the streams. Details of the projects are set out in the accompanying table.

IRRIGATION PROJECTS, QUEENSLAND, 1985–86

	Authorised allocations				*Actual use*		
	Irrigation		*Other uses (a)*				
Project	*Licenses*	*Allocation*	*Users*	*Allocation*	*Irrigation*	*Other uses*	*Estimated area irrigated*
	No.	megalitres	No.	megalitres	megalitres	megalitres	hectares
Boyne River	54	11,729	—	—	3,391	—	947
Chinchilla Weir	27	3,132	1	1,169	1,601	659	1,120
Dumaresq River	180	62,579	5	1,550	33,493	1,670	8,063
Fitzroy River Barrage	103	13,492	4	—	2,116	108	n.a.
Logan River	113	10,035	4	2,024	7,832	1,681	3,500
Lower Lockyer	193	11,578	—	—	11,958	—	3,000
Macintyre Brook	148	17,375	1	375	9,460	349	3,255
Mary Valley (*b*)	288	24,872	3	4,014	10,174	3,698	5,730
Three Moon Creek	142	14,607	8	673	7,735	531	3,500
Upper Burnett	195	19,446	4	1,385	19,250	1,274	2,718
Upper Condamine	71	10,927	67	5,807	11,505	4,951	8,158
Warrill Valley	357	15,448	6	16,856	13,510	5,810	10,600
Total	**1,871**	**215,220**	**103**	**33,853**	**132,025**	**20,731**	**50,591**

(*a*) Comprises industrial, urban, waterharvesting, rural water supply, stockwater and other uses. (*b*) Includes water allocations and use in Lower Mary River Irrigation Area.

Rural water supply schemes

Rural water supply schemes based on surface and underground water are constituted under the Water Act to improve water supplies for irrigation, mining, urban, domestic and stock use. These schemes are managed by Boards representing the ratepayers within the areas.

Underground water supplies

The availability of underground water, particularly the Great Artesian Basin, has played a major part in the development of the pastoral industry in Queensland. Underground water is also used extensively for irrigation on individual farms, particularly along the coastal fringe, and for domestic purposes. Some 45 per cent of the area irrigated in Queensland receives its supplies from underground sources. In accordance with the requirements of the *Water Resources Administration Act 1978–1984* the investigation of the availability of underground water is being pursued by geological mapping, investigation drilling and hydro-geological assessment. The predominant areas where water from this source is used for irrigation are the Burdekin Delta, Condamine Valley, Bundaberg, Lockyer Valley, Callide Valley and Pioneer Valley.

Western Australia

Administration

The Minister for Water Resources administers the State operated irrigation schemes under the *Rights in Water and Irrigation Act, 1914–1978.* The Minister is advised by an Irrigation Commission representing the local irrigationists and government, technical and financial branches. Under the *Country Areas Water Supply Act, 1947–1979,* the Minister also administers the water supplies to most country towns and reticulated farmland, as well as controls minor non-revenue producing supplies to stock routes and a few mines and agricultural areas with their associated communities. A small number of town supplies are administered by local boards under the *Water Boards Act, 1904–1979,* which provides a large degree of autonomy with ultimate Ministerial control.

Irrigation

Irrigation schemes have been established by the government on the coastal plain south of Perth, the water being channelled from dams in the adjacent Darling Range. The success of dairying and stock raising and, to a lesser extent, vegetable growing, which have replaced citrus growing, has led to a gradual but substantial extension of irrigation areas in the south-west.

Irrigation areas at Carnarvon and on the Ord and Fitzroy Rivers in the Timor Sea Drainage Division are established in the north of the State.

Since the mid-1930s, a centre of tropical agriculture has been developed at Carnarvon, near the mouth of the Gascoyne River. Initially, the principal source of irrigation water for plantations was private pumping from the sands of the Gascoyne River. Overpumping by the growers however, resulted in salt intrusion into the fresh water aquifer. Government controls were introduced and a major groundwater supply scheme upstream of the irrigation area has since been commissioned. A tropical research station is maintained at Carnarvon by the Department of Agriculture.

The Ord River Irrigation Project in the Kimberley Division provides for the eventual development of an irrigation area of some 70,000 hectares of land, one-third of which is in the Northern Territory.

The Camballin Irrigation District on the Fitzroy River floodplain in the West Kimberleys is dependent on diverted river flows and a small volume of storage behind the diversion structures on the Fitzroy River and Uralla Creek.

Country water supplies controlled by the Water Authority of Western Australia

Since 1947, enlargement and extensions of the Goldfields and Agricultural Water Supply and the development of the Great Southern Towns Water Supply have been carried out, mainly in accordance with a project known as the Modified Comprehensive Scheme. Under this scheme water has been supplied to towns and farms in the cereal and sheep districts of the State. Two years after the completion of the 1.7 million hectare scheme in 1961, an extension of 1.5 million hectares was agreed to with Federal-State funding.

Goldfields and Agricultural Water Supply

Water for the Eastern Goldfields is supplied by pipeline from Mundaring Reservoir in the Darling Range.

West Pilbara Water Supply

The West Pilbara Water Supply serves consumers in the towns of Dampier, Karratha, Roebourne, Wickham and Point Samson and industrial complexes at Dampier, Cape Lambert and the Burrup Peninsula. Water was previously supplied exclusively from the Millstream groundwater source but the Harding Dam (opened in 1985) will provide 80 per cent of total supply with Millstream providing drought security.

Geraldton Regional Water Supply

The Geraldton Regional Water Supply is supplied principally from the Allanooka groundwater source and a small amount from Wicherina (groundwater plus catchment).

Great Southern Towns Water Supply

This scheme provides water to towns and localities from Wellington Dam to Narrogin and along the Great Southern Railway from Brookton to Tambellup.

Port Hedland Water Supply

The Port Hedland Water Supply supplies Port Hedland, South Hedland and Wedgefield from the Yule River and De Grey groundwater sources.

The Mandurah Regional Water Supply

This scheme obtains supplies from the South Dandalup Dam and the Ravenswood groundwater source.

Local and other Regional Water Supplies

As well as the major water supply schemes above, water is also supplied by the government from seven other Regional Water Supply Schemes to 21 towns and from 104 local water supply schemes to 271 towns. The water comes from a variety of sources including underground, artificial catchments and stream flows.

Aboriginal Communities Water Supplies

Work has commenced on a program to upgrade the water services of remote Aboriginal communities. The program involves providing a town level of service to 40 communities and a support maintenance service to 29 of the 40 communities. Water for these supplies will come predominantly from underground sources.

Underground water

Considerable use is made of groundwater by individual farmers, pastoralists, market gardeners and others, although the water quality varies from place to place and much of it is too saline for irrigation or even stock purposes. Artesian wells throughout the State and non-artesian wells within 'declared' areas must be licensed under the *Rights in Water and Irrigation Act, 1914–1978*. Industries also use groundwater in substantial quantities, especially in the processing of titanium, iron and alumina, and this demand has intensified the search for groundwater.

South Australia

Administration

All major water resources and most public water supply schemes in South Australia are administered by the Engineering and Water Supply Department under the various statutes mentioned below.

- The *Waterworks Act, 1932–1984*, which empowers the Minister of Water Resources to impound or divert the water from any lake, watercourse or underground source for the purpose of establishing and maintaining public water supply schemes to serve proclaimed water districts throughout the State.
- The *Water Conservation Act, 1935–1975*, provides for the control of small reservoirs, bores, tanks, etc. established in remote areas as emergency water supplies or to assist local development.
- The *River Murray Waters Act, 1983*, which ratifies the River Murray Waters Agreement, and under which the Engineering and Water Supply Department operates and maintains Lake Victoria storage, nine weirs and locks downstream of Wentworth, New South Wales, and barrages at the river mouth.
- The *Water Resources Act, 1976–1983*, provides for the management of all aspects of water—surface and underground, quality and quantity. The Act provides for the control of diversions of surface waters from Proclaimed Watercourses and for the withdrawal of underground waters from Proclaimed Regions. It establishes a South Australian Water Resources Council and Regional Advisory Committees as vehicles for public participation in the water resources management process, and a Water Resources Appeal Tribunal to give individuals the opportunity to appeal against decisions of the Minister pursuant to the Act.

Summary of schemes

South Australian irrigation commenced with an agreement involving the Chaffey brothers in 1887 whereby an area was made available for the establishment of certain irrigation works at Renmark. From this start, government, co-operative and private irrigation areas totalling more than 42,000 hectares have been developed in the South Australian section of the Murray Valley. The authority controlling River Murray irrigation is the Engineering and Water Supply Department.

Except for quantities held in various lock pools and natural lakes, no water from the Murray is stored within South Australia for irrigation purposes. In addition to irrigation from the River Murray there are considerable areas irrigated from underground sources.

Adelaide Metropolitan Water Supply

In 1986–87, River Murray pipelines supplied 20 per cent of the total intake to the Metropolitan Adelaide Water Supply System, compared to 53 per cent for the previous year. The principal sources of supply for the nine storages in the Mount Lofty Ranges are the Rivers Onkaparinga, Torrens, South Para, Myponga and Little Para.

Country reticulation supplies

A number of reservoirs in the Barossa Ranges and other local sources are augmented by the Morgan-Whyalla, Swan Reach-Stockwell and Tailem Bend-Keith pipelines which provide River Murray water to extensive country areas. Surface and underground resources have been developed to supply most country centres not covered by the larger schemes.

Murray River irrigation areas

Where irrigation water in excess of plant requirements has been applied, perched water tables develop. Rising to the level of tree roots, these cause the death of orchards from salination and water-logging. Most orchards and vineyards are now drained by plastic and tile drainage systems, thus restoring their health and productivity. Disposal of drainage water is achieved by pumping to basins on river flats where it is evaporated, or by discharge into the river when it is in flood—apart from those areas connected to the Noora Drainage Disposal Scheme, completed in 1984. In the same year, another salinity project, the Rufus River Groundwater Interception Scheme, was commissioned. This scheme involves the intercepting of saline seepage to Rufus River (which flows from Lake Victoria to the Murray) and pumping it to an evaporation basin east of Lake Victoria and outside the river valley.

Tasmania

Main purposes of water conservation and utilisation

Because of the generally more adequate rainfall in Tasmania, scarcity of water is not such a problem as it is in most mainland areas. The only large-scale conservation by reservoirs is for hydro-electric power generation, but there are some moderately-sized dams built for mining and industrial interests, for irrigation and by municipal authorities for town water supplies.

Until a few years ago irrigated areas were negligible except for long established hop fields, but there is a rapidly expanding use of spray irrigation. Until recent years there has been almost complete dependence on natural stream flows, but the need for some regulating storages has become apparent. Increasingly, farmers are constructing storages of their own.

Underground water suitable for stock, minor irrigation works and domestic use is exploited in the consolidated rocks of southern, midlands and north-western Tasmania. In some coastal areas, notably King and Flinders Islands, water is obtained from aeolian sands.

The Mines Department is charged with the investigation of underground water resources. There is a great reserve of untapped permanent streams in the western half of the State, which is largely unsettled. The State's rivers discharge in the west, but diversion to the eastern half of the watersheds is not regarded as practicable.

Administration

In Tasmania, water supply was once exclusively the responsibility of local government authorities, but three statutory authorities, the Hobart Regional Water Board, the Rivers and Water Supply Commission and the North West Regional Water Authority, now operate bulk supply schemes. While the Board is responsible for bulk supplies in the Hobart area, the Commission exercises a general control over the use of the State's water resources and the Authority controls water supply to a number of northern municipalities.

Rivers and Water Supply Commission

The Commission is empowered by the *Water Act 1957* to take water at streams and lakes, or to issue others with licences to do so; licensing covers supply to specific industries and municipalities as well as for irrigation. The Commission is concerned with drainage trusts' operations, river improvements, irrigation, stream gauging, its own regional water schemes, and with assessing proposals for water supply, sewerage and drainage of towns. It operates in a similar manner to the Hobart Regional Water Board in controlling the water schemes serving the East Tamar region (North Esk Regional Water Supply), the West Tamar area (West Tamar Water Supply) and the Prosser River Scheme near Orford. The North Esk Regional Water Supply Scheme supplies industrial users at Bell Bay and municipalities on the eastern bank of the River Tamar. The West Tamar Water Supply serves the Beaconsfield municipality. The local government authorities retain primary responsibility for reticulation and sale to consumers, except to certain industrial users.

In municipalities not serviced by the Hobart Regional Water Board, the Rivers and Water Supply Commission or the North West Regional Water Authority, the supply of water is a function of the local municipal council.

Irrigation

The Rivers and Water Supply Commission is in charge of three major irrigation schemes, these being the Cressy-Longford Irrigation Scheme (opened in 1974), the South East Irrigation Scheme, Stage I, (opened in 1986), both of which supply water via open channel, and the Winnaleah Irrigation Scheme which supplies water via pipelines.

Of the three schemes, Cressy-Longford is the largest (serving 88 properties) with 10,000 hectares being fit for irrigation. The Coal River Scheme is capable of serving 107 properties, of which 3,800 hectares are fit for irrigation. The Winnaleah Scheme serves 1,500 hectares on 72 properties.

The majority of land irrigated in the State in 1986–87 was watered by private schemes, either by pumping directly from unregulated streams or from on-farm storages. Pasture still predominates as the major crop irrigated, but other vegetables now constitute 33 per cent of the total area irrigated.

Northern Territory

Administration

Under the Northern Territory *Control of Waters Act 1981*, control of natural waters is vested in the Crown. The diversion of water is prohibited except under prescribed conditions. The Act requires that drilling for ground water be carried out only by drillers who are registered under the Act and who are required to provide the government with information on bores drilled. In particular areas, described as Water Control Districts, where stricter control is necessary, the construction or use of a well or water bore without a permit can be prohibited.

Under the *Water Supplies Development Act 1960*, any landholder engaged in pastoral or agricultural production may seek information or advice from the Commissioner of Water Development who is appointed under the Act.

The Water Resources Directorate of the Power and Water Authority is responsible for the assessment, planning and management of surface and groundwater resources throughout the Northern Territory. It carries out systematic stream gauging, the collection of data relating to the quantity and quality of surface and groundwater, flood prevention and control, and waste disposal and baseline inventory. It is involved in water pollution studies and control, and carries out environmental assessments of water and related developments. It also provides an advisory service under the *Water Supplies Development Act 1960* and administers permits and licences under the *Control of Waters Act 1981*.

These arrangements have applied since 1 July 1987. It is proposed that Northern Territory water legislation be amalgamated into a new Act to be called the 'Water Act'.

Surface water

Hydrological investigations and data collection are undertaken across the Northern Territory and the data are published by the Water Resources Group. The program includes base stream gauging stations and pluviographs (automatic rainfall recorders).

Groundwater

For information on Northern Territory groundwater (and surface water) resources see the Northern Territory Department of Mines and Energy's publication *Water Northern Territory—Volume 1*, the Department of Resources and Energy's publications *Australia's Groundwater Resources, 1983* and the Australian Water Resources Council's publication *1985 Review of Australia's Water Resources and Water Use.*

Of 19,596 bores and wells registered in the Territory to 30 June 1987, 24 per cent were for pastoral use, 24 per cent were investigation bores, 33 per cent served urban and domestic supplies, 4 per cent were for agriculture, 11 per cent were used for mining and the remaining 4 per cent for various other uses.

Water supplies

The largest water conservation projects in the Territory are the Darwin River Dam (259.0 gigalitres) and the Manton Dam (15.7 gigalitres) which both serve Darwin with a reticulated water supply. Groundwater from McMinns Lagoon area can be used to augment supply.

Most other towns and communities, including Alice Springs, Tennant Creek, Jabiru and Nhulunbuy, are supplied from groundwater.

Irrigation in the Territory is expanding, but is not extensive, being confined to locations near Darwin, Adelaide River, Daly River, Katherine, Ti Tree and Alice Springs for the purpose of growing fruit, vegetables, fodder crops, pastures and some dairying. Most of this irrigation is carried out using bore water.

There is increasing demand for water resources assessment studies and assistance for relatively small irrigation projects.

Australian Capital Territory

Surface water

Surface water storages supplying A.C.T. (population about 250,000) and the city of Queanbeyan (population about 22,500) are located to the south-west and south-east. The storages to the south-west are in the heavily timbered, mountainous Cotter River catchment within the A.C.T., the storages being Corin Dam (75.5 gigalitres), Bendora Dam (10.7 gigalitres) and Cotter Dam (4.7 gigalitres). The storage to the south-east in New South Wales in the Queanbeyan River catchment (over which the Commonwealth has permanent water rights) on the western slopes of the Great Dividing Range is the Googong Dam (125.0 gigalitres).

The existing storages on the Cotter and Queanbeyan Rivers have an ultimate combined capacity to serve 450,000 persons. The remaining water resource within the A.C.T. is the Gudgenby River which is at present not utilised but has the potential to serve approximately 200,000 persons.

A network of stream gauging stations in the A.C.T. monitors surface water resources while a number of gauging stations are provided with telemeters to provide a flood warning system in association with the Bureau of Meteorology.

Groundwater

Groundwater in the A.C.T. and environs occurs mainly in fractures in crystalline rock such as granite and volcanic rocks; in folded and fractured slate; and, rarely, in solution cavities in limestone. Alluvial aquifers of significance are restricted to the Lake George basin and small areas along mature sections of the Molonglo and Murrumbidgee rivers. Groundwater has been used in the past by most primary producers to augment surface storage. Groundwater production bores in the A.C.T. have yields ranging between about 0.4 and 20 KL per hour; 3 KL per hour is about the average yield. However, many farm bores have fallen into disuse as a result of the government's resumption of freehold land within the A.C.T., and because of the rapid expansion of urban growth. The Bureau of Mineral Resources has provided a bore-siting, groundwater-quality and yield-prediction service in and around the A.C.T. since the early 1950s and has maintained a network of observation bores which have been monitored regularly.

The Bureau of Mineral Resources provides technical advice to landholders and drilling contractors on groundwater and, occasionally, on runoff.

DROUGHT IN AUSTRALIA

(This special article has been contributed by the National Climate Centre, Bureau of Meteorology)

The incidence of drought in Australia to 1968 was surveyed in the 1968 *Year Book* No. 54. The purpose of this article is to bring that survey up to date with information to 1986 inclusive. While broadly summarising the material from the earlier article, the most recent widespread and severe drought in Australia, the drought of 1982–83, is given a special mention. Developments in the Australian Drought Watch Service, operated by the Bureau of Meteorology, and in the monitoring of variations in the climate that can lead to drought are also briefly described.

Definition of drought

Drought in general refers to an acute water shortage. However the term is relative because water availability, which depends on supply and demand, is affected by regional differences in both the climate and the activities of the water user. To a large extent, users adapt to a perception of what is the normal supply for an area but there are other differences. A farmer, for example, is concerned with insufficient water during a season for crops, pastures and stock. A civil engineer in the same area may be more concerned with longer term aspects associated with the storage and managing of water in a reservoir.

On the supply side of the drought equation the main determinants are meteorological and hydrological. It is the former that is given emphasis in this article. A comprehensive coverage of Australia's water resources, including the impact of drought, is given in the series of publications, *Water 2000* prepared for the Australian Water Resources Council in 1983. The broader subject of drought in Australia and the mitigation of its adverse effects has been the topic of many papers and symposia, for example, see the report and recommendations of a drought workshop held in Melbourne by the Royal Meteorological Society in 1986.

The amount of water available for the great majority of users depends on the storage, whether it be in the soil, farm dams, artesian basins, reservoirs and so on. In addition, water availability is affected by losses due to run-off, evaporation and wasteful usage. However the primary indicator of water availability in Australia is rainfall and, given its extensive measurement across the country, rainfall is the most suitable starting point to assess the incidence of drought.

One important aspect of rainfall or more specifically the lack of it, is the difference between aridity and drought, distinguished by Coughlan and Lee (1978) thus: *Aridity implies a high probability of rainfall for a given period below a low threshold. Drought implies a low probability of rainfall for a given period below a relatively low threshold.*

Thus establishing drought criteria is less meaningful for arid zones since the prospects of receiving useful rainfall are significantly lower there than in more abundant rainfall zones. During the dry seasons of the seasonal rainfall zones, e.g. northern Australia, the expectation of useful rainfall can also be quite low and one may think in terms of seasonal aridity. Defining drought criteria for areas with highly seasonal rainfall requires separate consideration and the problem of delineating the onset and retreat of drought in such areas can be quite complex.

Pastoral drought and climatic zones

From a practical viewpoint then, drought is intrinsically related to climatic zones and to the resistance of plants to water shortages. Generally, natural pastures and herbage have evolved to become highly resistant to extended periods of low rainfall particularly in the arid zone. On the other hand, cereal crops such as wheat, being more sensitive to water limitations, require specific treatment in the establishment of criteria for drought.

There are many ways of delineating climatic zones. Those shown for Australia in the diagram on page 211 are based principally on seasonal rainfall characteristics, although evaporation has been taken into account to some extent in the derivation of the zonal boundaries (Bureau of Meteorology, 1975).

In the winter and uniform zones of Australia where agricultural and pastoral activities are more intensive, three consecutive months, although an arbitrary figure, has been found to be an appropriate minimum period for a significant deficiency in the rainfall to develop. Rainfall in the summer rainfall zone is generally more variable when compared with the winter and uniform zones. Coughlan and Lee (1978) have used the summer rainfall zone in northern Australia to illustrate how probabilities of water stress in sown crops may be affected by the expected variability within any one season. Native pastures, in contrast, have evidently evolved to respond more effectively to seasonal rainfall as a whole and are less likely to be affected by the distribution of variable quantities throughout the season. Soil type and the degree to which it has been worked are also significant factors in this regard.

Rainfall in arid zones, as well as being low, is usually highly variable in space and time, and natural pastures and herbage are strongly resistant to such stresses. Drought in an arid zone is generally more appropriate to longer periods, e.g. a year or more, rather than to periods as short as three consecutive months.

Rainfall deficiency and the Australian Drought Watch Service

There have been many attempts to arrive at a satisfactory method of objectively defining drought, establishing criteria for its onset, monitoring its course and declaring a drought ended. Perhaps the most successful approach, and one of the simplest in concept, uses the first decile of accumulated rainfall for a given period as an indicator of drought (Gibbs and Maher, 1967; Lee and Gaffney, 1986). The first decile is simply that amount of rainfall which is exceeded on ninety per cent of occasions for the period of the year specified, e.g. winter, spring or indeed any period of consecutive months. The concept of rainfall deficiency employed by the Bureau of Meteorology is based on a comparison of the rainfall total for at least three months in a specific area with the historical long period record for those three or more months. Thus an area is categorised as having a rainfall deficiency when the rainfall for a period of at least three months falls within the lowest ten per cent (below the first decile) of the historically recorded rainfalls for the same period of the year.

The terms serious and severe rainfall deficiency are defined as follows:

- a *serious rainfall deficiency* exists for a specific period of three (or more) months when the rainfall is above the lowest five per cent of recorded rainfalls, but is less than the ten per cent value;
- a *severe rainfall deficiency* exists for a specific period of three (or more) months when the rainfall is among the lowest five per cent of recorded rainfalls.

When serious or severe deficiencies exist in an area they continue as such until:

(a) rainfall for the past month is already sufficient to rank in the 30th percentile or greater of the recorded rainfalls for the three month period starting with that month (a break due to relatively heavy rainfall), or

(b) rainfall for the past three months ranks in the 70th percentile or greater of the recorded rainfalls for the corresponding three month period (a break due to a series of lesser but overall significant falls).

Rainfall deficiency criteria based on decile values provide the basis for alerting to incipient drought and monitoring the course of extant drought. The procedures, which have been in use in Australia since 1965, have also been adopted by the World Meteorological Organization to monitor drought on a worldwide scale (World Meteorological Organization, 1985). The Drought Watch Service, operated by the National Climate Centre in the Bureau of Meteorology, uses rainfall data from around 800 individual stations throughout the country to provide a monthly statement supported by maps and figures on the distribution of existing rainfall deficiencies (Coughlan, 1986).

Major droughts in Australia

Foley (1957), on the basis of rainfall analyses, classified major droughts in Australia from the early period of European settlement to 1955. He referred to these droughts, summarised in Table 1, as major, severe and widespread and his broad descriptive material indicates that each affected several States covering about one quarter of Australia or more, for varying periods of one or more years. Some of these droughts could be described as drought periods consisting of a series of dry spells of various lengths, overlapping in time and space, and totalling up to about a decade, as in the case of the 1895–1903 drought.

Subsequent to Foley's work, major droughts in Australia have been assessed from time to time using rainfall decile analyses. Typically they have been described as areas of at least serious rainfall deficiency (below the first decile), collectively encompassing at least one quarter of Australia for periods in excess of 10 months. The drought period of 1958–68 and the drought of 1982–83 met these criteria.

TABLE 1: MAJOR DROUGHTS IN AUSTRALIA

Drought period (a)	*Description*
1864–66 (and 1868)	The little data available indicate that this drought period was rather severe in Victoria, South Australia, New South Wales, Queensland and Western Australia.
1880–86	Victoria (northern areas and Gippsland); New South Wales (mainly northern wheat belt, northern tablelands and south coast); Queensland (1881–86, in south-east with breaks—otherwise mainly in coastal areas, the central highlands and central interior in 1883–86); and South Australia (1884–86, mainly in agricultural areas).
1888	Victoria (northern areas and Gippsland); Tasmania (1887–89 in the south); New South Wales; Queensland (1888–89); South Australia and Western Australia (central agricultural areas).
1895–1903	Practically the whole of Australia was affected but most persistently the coast of Queensland, inland areas of New South Wales, South Australia, and central Australia. This was probably Australia's worst drought to date in terms of severity and area. Sheep numbers, which had reached more than 100 million, were reduced by approximately half and cattle numbers by more than 40 per cent. Average wheat yields exceeded 8 bushels per acre in only one year of the nine, and dropped to 2.4 bushels per acre in 1902.
1911–16	Victoria (1913–15 in north and west); Tasmania (1913–15); New South Wales, particularly inland areas; Queensland; Northern Territory (mainly in the Tennant Creek–Alexandria Downs area); South Australia (some breaks in agricultural areas); and Western Australia (1910–14).
1918–20	Queensland, New South Wales, South Australia, Northern Territory (Darwin–Daly Waters area and central Australia), Western Australia (Fortescue area), Victoria, and Tasmania.
1939–45	New South Wales (severe on the coast), South Australia (persistent in pastoral areas), Queensland and Tasmania; also (more particularly in 1940 and 1944–45) in Western Australia, Victoria, and central Australia; Tennant Creek–Alexandria Downs area in 1943–45.
1958–68	This drought was most widespread and probably second to the 1895–1903 drought in severity. For more than a decade from 1957, drought was consistently prominent and frequently made news headlines from 1964 onwards. This was treated as one major drought period, but could be subdivided into two which overlapped, both in time and space. Central Australia and vast areas of adjacent Queensland, South Australia, Western Australia, New South Wales, and northern Australia were affected, with varying intensity, 1957–66; and south-eastern Australia experienced a severe drought, 1964–68.
1982–83	This extensive drought affected nearly all of eastern Australia, and was particularly severe in south-eastern Australia. Lowest ever 11 month rainfall occurred over most of Victoria and much of inland New South Wales and central and southern Queensland; and lowest ever 10 month rainfall occurred in much of South Australia and northern Queensland. Total losses were estimated in excess of $3,000 million.

(*a*) Major droughts to 1939–45 were classified by Foley (1957). Subsequent droughts were classified by the Drought Watch Criteria (1986).

Australia's most severe drought periods since the beginning of European settlement appear to have been those of 1895–1903 and 1958–68. The 1982–83 drought was possibly the most intense with respect to the area affected by severe rainfall deficiencies. These periods were comparable in their overall impact, but differed appreciably in character.

The 1895–1903 drought period was probably Australia's worst to date, in terms of both its severity and area—affecting practically the whole of Australia at various times but more persistently in parts of eastern and central Australia. Stock and crop losses were apparently the highest in Australian history.

The 1958–68 drought period is described in the article contained in the 1968 *Year Book* No. 54. That drought period was widespread and probably second only to the 1895–1903 drought period in severity. The areas affected and their durations of drought were variable and overlapping.

The 1982–83 drought was notably severe also, especially in south-eastern Australia. This drought was monitored closely and is discussed more fully below.

Droughts of a lesser degree of severity categorised by Foley (1957) are given in Table 2. The droughts of 1970–73 and 1976 were analysed by rainfall deficiency methods based on decile analysis and are appropriate for inclusion in this category.

TABLE 2: DROUGHTS IN AUSTRALIA OF LESSER SEVERITY

Drought period (a)	*Description*
1922–23 and 1926–29	Queensland (severe); New South Wales (intermittent); Western Australia (more particularly Fortescue: 1922–29); South Australia (mainly pastoral areas); central Australia (1924–29); Northern Territory (1926–29); Victoria (1925–27; severe in the north 1925–29) and Tasmania (1925–27, not continuous).
1933–38	Western Australia (severe in pastoral and northern agricultural areas); Queensland (breaks on the coast); Victoria (north and Gippsland); New South Wales (not continuous except on the northern tablelands); Northern Territory; South Australia (1935–36 in pastoral areas and 1938 in agricultural areas) and northern Tasmania (1935–37, not continuous).
1946–49	Queensland (central coast and highlands and central interior, elsewhere mainly in 1946); Northern Territory and New South Wales (mainly in 1946–47); Western Australia (more particularly in central agricultural areas, 1947–50), and northern Tasmania (1948–49).
1951–52	Queensland and Northern Territory; and Western Australia, especially pastoral areas (1951–54).
1970–73	Prolonged drought over the north-eastern goldfields of Western Australia and adjacent areas, caused by successive below average rainfall years.
1976	Western New South Wales, most of Victoria and South Australia due to failure of autumn–winter rains; break in September 1976.

(*a*) The droughts to 1951–52 inclusive, were classified by Foley (1957). The subsequent droughts, 1970–73 and 1976, were classified by the Drought Watch Criteria (1986).

Severe droughts in south-eastern Australia

South-eastern Australia is taken to include New South Wales, southern Queensland, Victoria, Tasmania and the settled parts of South Australia; it contains about 75 per cent of the nation's population, and major droughts affecting the region have a markedly adverse impact on the economy. Severe droughts in south-eastern Australia are usually caused by a failure of the winter–spring rains and may extend through summer to the following autumn.

A severe drought is defined here in general terms as a drought in which ten or more rainfall districts are substantially affected by rainfall deficiencies for eight or more months. The onset of drought is taken as the month in which rainfall drops below average, and which marks the start of a period with serious rainfall deficiencies (below the first decile) lasting three months or more. A drought is considered broken when rainfall meets the criteria defined previously.

TABLE 3: SEVERE DROUGHTS IN SOUTH-EASTERN AUSTRALIA

Drought period (a)	*Area affected*	*Average duration and month of break*	*Descriptive remarks*
1888	Southern Queensland, most of New South Wales, Victoria, South Australia and parts of Tasmania	9–10 months to January 1889	In parts of northern New South Wales, not broken until autumn 1889
1902	New South Wales, Victoria, parts of southern Queensland, South Australia and Tasmania	Victoria, South Australia and Tasmania: 9 months to December 1902 New South Wales and southern Queensland: 12 months to 1902	Considerable overlapping of affected areas
1914–15	Victoria, New South Wales west of the tablelands, settled areas of South Australia and most of Tasmania	South Australia: 11–12 months to June 1915 Northern Victoria and New South Wales: 10–12 months to June/July 1915 Southern Victoria: 16 months to May/June 1915	Rainfall during 1913 also below average in parts of south-eastern Australia; and much of Victoria and western New South Wales had some relief in the summer of 1914–15
1940–41	Most of New South Wales, Victoria, South Australia and eastern Tasmania	South Australia: 6 months to January 1941 Tasmania: 8–9 months to January 1941 Victoria: 11 months to January 1941	Variable durations in New South Wales
1944–45	Most of New South Wales, Victoria and South Australia	South Australia and south-western Victoria: 4–6 months to summer 1944–45 Southern Victoria: 12 months to August 1945 Northern Victoria and southern New South Wales: 15–19 months to August 1945 Northern New South Wales: 15–17 months to June 1945	Well below average rainfall in parts of South Australia in April–June 1945; and 1943 was also a dry year in parts of south-eastern Australia
1967–68	Victoria, southern New South Wales, South Australia and Tasmania	South Australia: 12–13 months to March 1968 Tasmania: 15–16 months to May 1968 Victoria and New South Wales: 14–15 months to May 1968	Other extensive parts of Australia affected during 1958–67
1972–73	Most of Victoria, western and central New South Wales, South Australia and north-eastern Tasmania	9–10 months ending February 1973	Drought broke in February 1973; except in north-eastern Tasmania, where it broke in autumn 1973
1982–83	Victoria, most of New South Wales, South Australia, southern Queensland and Tasmania	Generally 11 months ending February 1983 Tasmania: 9 months ending February 1983	Drought broke in autumn 1983

(*a*) The drought periods prior to 1965 inclusive, occurring prior to the operation of the Drought Watch Criteria, have been re-assessed applying those criteria. The specified severe droughts in south-eastern Australia are actually encompassed within the major droughts in Australia contained in Table 1 (except 1972–73).

These past, severe droughts were investigated (Bureau of Meteorology, 1983) using seasonal rainfalls over south-eastern Australia based on a limited network of rainfall stations and previously published material. Droughts after 1914 were identified using also the district rainfall data. Two earlier droughts affected south-eastern Australia, in 1864–66 and 1880–86, but rainfall data for these are incomplete. The 1918–20 period was also significantly drought affected without quite meeting the criteria.

Of these eight severe droughts in south-eastern Australia, four ended in summer (1888, 1902, 1940–41, 1972–73). Two droughts (1967–68 and 1982–83) broke in autumn. The remaining two (1914–15 and 1944–45) generally persisted until the following winters, although there were useful summer rains over a significant portion of the drought affected areas.

The 1982–83 major drought

The following figure indicates the severity and extent of the 1982–83 major drought in terms of rainfall deficiency over the extensive areas where rainfall for the duration of the drought, approximately ten to eleven months, was the lowest on record. This was due to a widespread failure of the winter and spring rains of 1982. By the end of February 1983, in this vast area of eastern Australia, only small parts of south-east Queensland, adjacent north-east New South Wales and parts of south-west and north-east Tasmania were free from drought.

In the far south-eastern part of the continent the drought was markedly severe. Virtually all of Victoria and southern New South Wales had registered record low rainfall for the eleven months, April 1982–February 1983 inclusive. Much of the settled areas of South Australia had recorded their lowest ever rainfall for the ten months, May 1982–February 1983 inclusive.

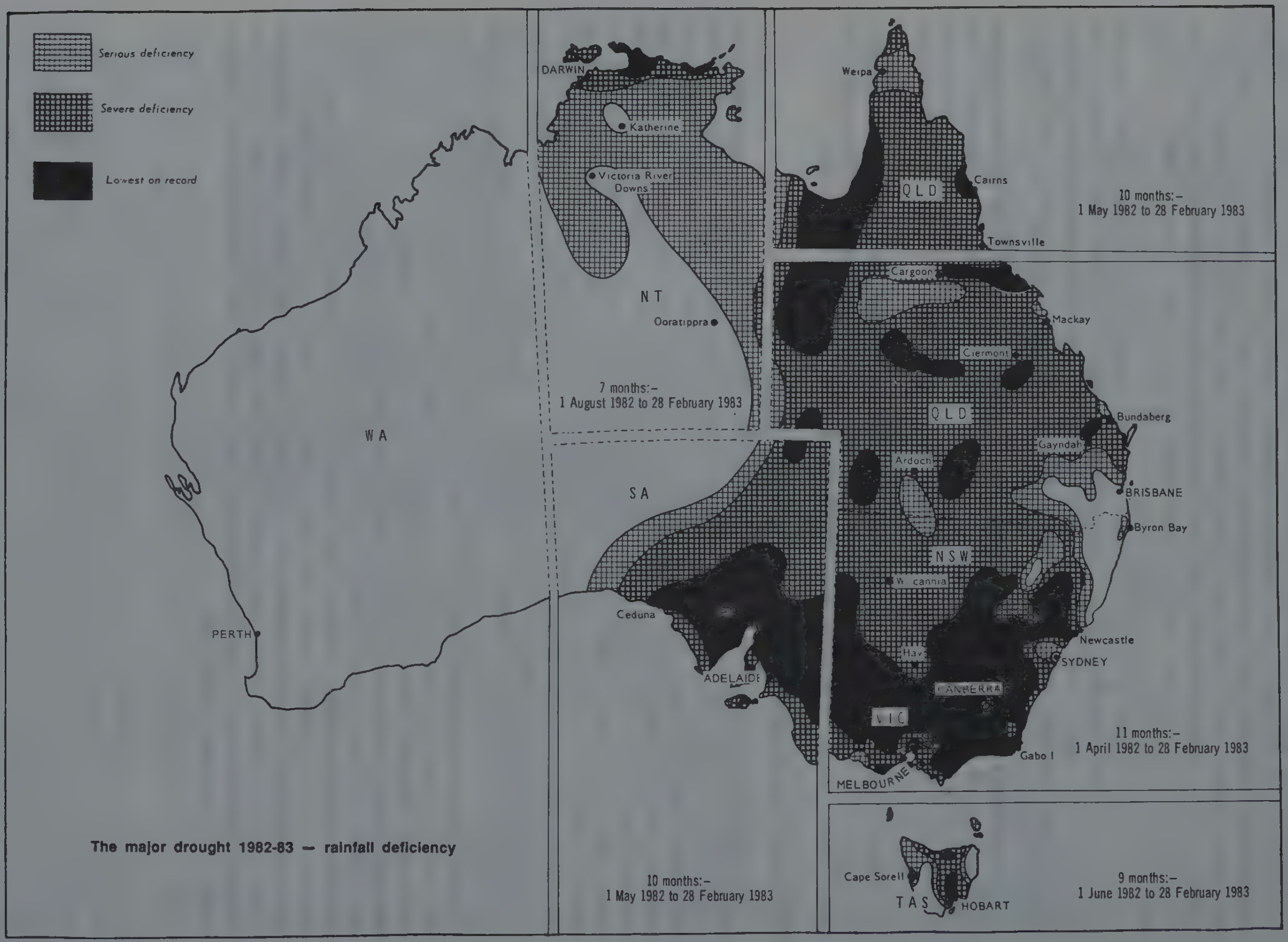
It is generally agreed that the widespread bushfires which culminated in the enormous conflagrations of Ash Wednesday, 16 February 1983, were a direct consequence of the preceding drought conditions. Total losses caused by the drought were estimated by the Australian Government to exceed $3,000 million; and estimates of losses in south-eastern Australia exceeded $1,200 million.

Widespread heavy rains in March 1983 significantly reduced the extent of the drought over eastern Australia. Heavy April rains further decreased the area of the drought, and record May rains left only small scattered remnants at the end of autumn 1983.

Physical causes of drought

The physical causes of drought, as distinct from the socio-economic factors that may induce stress in association with below average rainfall (e.g. *see* Coughlan, 1985), have their origins in the fluctuations of the global climate system. There are many possible reasons why the weather during a particular month or season will differ from one year to the next. The climate system as a whole is an extremely complex mix of different sub-systems all interacting with each other on a wide range of time and space scales, e.g. the atmosphere, oceans, ice masses and the biosphere. The potential for variability from year to year and decade to decade therefore is very high. Given this high level of 'internal' variability, the significance or even the reality of possible external influences from sunspots, phases of the moon and so on, remains highly questionable on time scales shorter than millenia.

The fact that variability in time and space is an inherent character of the climate means that droughts of varying extent and severity must also be an inherent part of this variability. With an increase in understanding of how the various parts of the climate system fit together and interact with each other, is coming a greater understanding at least of what causes the larger scale droughts. Perhaps the most widely known climatic anomaly that has developed every few years is the so-called El-Nino phenomenon. El-Nino, a name given to an anomalous warm ocean current off the equatorial Pacific coast of South America is part of a much wider system affecting the whole of the Pacific Basin and probably the whole globe. The appearance of an El-Nino is very often associated with below average rainfall over much of eastern Australia. El-Nino is linked to a swing in the mean atmospheric pressure difference across the Pacific Ocean called the Southern Oscillation. Many of the widespread and severe droughts affecting eastern Australia identified above were a direct consequence of a marked swing in the Southern Oscillation.


Serious deficiency
Severe deficiency
Lowest on record
WA
PERTH
DARWIN
Katherine
Victoria River Downs
N T
Ooratippra
7 months:-
1 August 1982 to 28 February 1983
S A
Ceduna
ADELAIDE
10 months:-
1 May 1982 to 28 February 1983
Weipa
Cairns
Q L D
Townsville
10 months:-
1 May 1982 to 28 February 1983
Cargoon
Mackay
Clermont
Q L D
Bundaberg
Gayndah
Ardoch
BRISBANE
Byron Bay
N S W
Wilcannia
Hay
Newcastle
SYDNEY
CANBERRA
VIC
Gabo I
MELBOURNE
11 months:-
1 April 1982 to 28 February 1983
Cape Sorell
T A S
HOBART
9 months:-
1 June 1982 to 28 February 1983

The major drought 1982-83 — rainfall deficiency

Monitoring the weather and climate

With a growing international awareness of the social and economic impacts of climate variability, including drought, the World Meteorological Organization (WMO) in the late 1970s instituted a World Climate Programme (WCP) to complement its long established World Weather Watch Programme. The WCP is the formal framework for international co-operation in climate data exchange, climate monitoring, applications of climate data, climate research and the impacts of climate variability on man and the environment. As a national focus, some countries (e.g. U.S.A. and Canada) have established National Climate Programs.

Australia's Bureau of Meteorology plays a key role in international data exchange and analysis by operating in Melbourne one of the three World Meteorological Centres (WMC), the other two centres being in Washington and Moscow. The Melbourne WMC and a Regional Meteorological Centre in Darwin, also operated by the Bureau, collect and process weather and climate data for the southern hemisphere. These Centres issue daily weather analyses and forecasts for the southern hemisphere, eastern Asia and the western equatorial Pacific.

The National Climate Centre (NCC), in addition to its monitoring of fluctuations in Australia's climate, carries out analyses of monthly and seasonal variations of atmospheric pressure, temperature and wind over the southern hemisphere as a whole. The analyses are contained in the NCC's monthly Climate Monitoring Bulletin accompanied by seasonal indications, outlooks and inferences when feasible. Information is regularly exchanged between similar climate centres operating in other countries.

The Bureau of Meteorology Research Centre has also instituted a program of research into the problems of forecasting climate fluctuations on monthly and seasonal time scales. Any improvements in this regard would have far reaching implications for our ability to cope with drought. Already there are signs of some skill in using the new found knowledge of the Southern Oscillation/El-Nino phenomenon to assess the likelihood of major anomalies in winter/spring rainfall over eastern Australia several months in advance.

Conclusion

Since the 1860s there have been nine major Australian droughts. The major drought periods of 1895–1903 and 1958–68 and the major drought of 1982–83 were the most severe in terms of rainfall deficiency and their effects on primary production. In south-eastern Australia the droughts of 1967–68 and 1982–83 were notably extreme. There have been six other droughts of a lesser degree of intensity, but nevertheless causing appreciable losses in large areas of several States. In south-eastern Australia there have been eight severe droughts, mostly encompassed within the major Australian droughts.

Droughts will continue to be a prominent feature of the Australian scene. Improved meteorological drought watch services and hopefully an improved ability to forecast droughts through local research and participation in the WCP will help to mitigate their adverse impacts. The nature of drought, however, and the way in which the community should deal with it are complex issues incorporating significant variables in fields such as hydrology, agriculture, economics and sociology, as well as in the political realities of the day.

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CHAPTER SEVENTEEN

ENERGY

Introduction

Australia is well endowed with energy resources and is presently one of only five Organisation for Economic Co-operation and Development (OECD) countries that are net energy exporters. It presently supplies about two-thirds of its oil requirements from domestic sources and should be able to maintain this relatively favourable situation for some years at least.

Estimates of Australia's demonstrated economically recoverable resources of energy as at June 1986 were:

Brown Coal	43 gigatonnes
Black Coal.	34 gigatonnes
Uranium	462 kilotonnes U
Natural Gas	691 teralitres
Crude oil, gas condensate and LPG . .	457 gigalitres

Additionally, there are huge inferred resources of black coal amounting to over 500 gigatonnes, and resources of oil shale equivalent to about ten times the level of crude oil and condensate resources.

In recognition of the importance of energy resources to Australia's national wealth, policies have been developed to respond to the changing pattern of world energy supplies, to try to minimise uncertainty for the future and to develop other energy sources which can substitute for oil in a wide range of uses, in both domestic and export markets. The basic aims of these policies are to:

- ensure that an adequate supply of energy is available at all times;
- in relation to liquid fuels,
  - — achieve the optimum economic level of liquid fuels self-sufficiency through, for example:
    - .. encouraging the more efficient use of liquid fuels
    - .. replacing the use of oil by relatively abundant energy sources such as coal and natural gas
    - .. encouraging petroleum exploration and development;
    - .. supporting the development of technologies for alternative energy sources, particularly synthetic liquid fuels and renewables; and
  - — prepare Australia for major interruptions to oil supplies through maintaining stocks, emergency-allocation schemes and other short lead-time measures;
- facilitate the efficient use of energy in Australia and the efficient development of Australia's energy resources in response to the needs of domestic and overseas energy markets;
- ensure that benefits of energy-resource development are shared equitably throughout the Australian community.

In addition, the Government has made a number of decisions on uranium policy which are of relevance to the determination of priorities for funding of Research Development and Demonstration (RD&D) projects in the nuclear area. Firstly, uranium mining will only be permitted at Nabarlek, Ranger and Olympic Dam. Secondly, development of further stages of the nuclear fuel cycle in Australia will not be permitted as the Government will not facilitate, or be otherwise involved in, uranium enrichment. However, the Government supports RD&D directed at improving radioactive waste management.

In establishing an appropriate framework within which Australia's energy industries can develop, the Government attaches key importance to the pricing and fiscal environment surrounding production, consumption and trade of Australia's energy resources. Realistic pricing of all energy resources is of fundamental importance in developing this framework.

The Government completed reviews of the crude oil marketing and taxation arrangements applying to the petroleum industry in mid-1987. Details of marketing, pricing and secondary tax arrangements are given on pages 639 and 640.

Advice and co-ordination

Institutional arrangements

The Commonwealth Minister for Primary Industries and Energy has portfolio responsibility for national energy policy matters, including the commercial development of hydrocarbon fuels and minerals.

The Department of Primary Industries and Energy provides advice to the Minister on energy policy and provides support for a number of advisory bodies including the National Energy Research Development and Demonstration Council (NERDDC), the Australian Minerals and Energy Council (AMEC), the National Oil Supplies Advisory Committee (NOSAC), the National Petroleum Advisory Committee (NPAC), the National Fuels Emergency Consultative Committee (NFECC), and the Australian Coal Consultative Council (ACCC).

It is also responsible for the implementation of action required from Australia's membership of the International Energy Agency (IEA) and for the national system of accounting for a control of nuclear materials under Australia's Agreement with the International Atomic Energy Agency (IAEA).

International Energy Agency—IEA

The IEA was established in Paris in November 1974 as an autonomous institution within the framework of the OECD. Australia joined the IEA in May 1979.

The Agency carries out the International Energy Program and the Long Term Co-operation Program. These programs aim to:

- prepare member countries against risk of oil supply disruptions and share remaining supplies in the event of a severe oil shortfall;
- develop alternative energy sources and the more efficient use of energy through co-operative research and development programs;
- promote co-operative relations with other oil-producing and oil-consuming countries.

The main decision-making body of the IEA is the Governing Board. The Board meets as required at Ministerial level and several times a year at senior official level. The IEA has standing groups on Long Term Co-operation, the Oil Market, Emergency Questions, a Committee on Research and Development and an ad hoc group on International Energy Relations.

Research and development

National Energy Research, Development and Demonstration Program—NERD&D

The NERD&D Program has been established to stimulate the level of energy research, development and demonstration in Australia in line with government energy policy and priorities. Grants under the NERD&D Program are approved by the Minister for Resources, who is advised by the National Energy Research, Development and Demonstration Council. The Council consists of twelve members drawn from government, private industry and tertiary institutions. It is supported by six technical standing committees covering all major areas of energy technology. High priority areas include energy management, oil and gas exploration and recovery techniques, coal combustion, coal evaluation, coal mining productivity and safety, coal beneficiation, production of liquid fuels from natural gas and synthesis gas, and substitution of diesel oil and petrol by natural gas and LPG.

The NERD&D Program is administered by the Department of Primary Industries and Energy. From the start of the program in 1978 to June 1987, $175.1 million had been committed to research projects undertaken by government, industry and universities.

Additional Commonwealth support for energy research and demonstration is provided through budget appropriations to Commonwealth agencies such as CSIRO, BMR, and ANSTO, and through Commonwealth funding of all Australian universities. The Commonwealth also provides an incentive for research and development through the 150 per cent tax deduction scheme and through the Grants for Industrial Research and Development Scheme.

Commonwealth Scientific and Industrial Research Organisation—CSIRO

Energy research within the Institute of Energy and Earth Resources is carried out with the objectives of improving methods of locating, evaluating, defining and characterising Australia's energy resources and planning their development and effective use, consistent with the minimisation of environmental stresses. Divisions of the Institute engaged in energy research include Geomechanics, Energy Chemistry, Energy Technology, Fossil Fuels, Mineral Chemistry and Mineral Engineering. Research on certain renewable sources of energy is carried out at the Centre for Irrigation and Freshwater Research.

Australian Minerals and Energy Council—AMEC

The Australian Minerals and Energy Council was established in April 1976 by agreement between State and Commonwealth mines and energy Ministers, replacing the former Australian Minerals Council. AMEC is principally a body for consultation on minerals and energy matters and provides a forum for Ministers to discuss policy issues of mutual concern and co-ordinate policy action. An AMEC advisory committee which is composed of the departmental heads or their nominees provides for officer level consulation and information exchange. AMEC establishes committees, sub-committees and working parties to undertake specific tasks and report back through its advisory committee as the need arises.

Australian Coal Consultative Council—ACCC

The Australian Coal Consultative Council was established in March 1983 to review and report from time to time on the economic and structural problems of the industry. The Council is a tripartite body, chaired by the Minister for Primary Industries and Energy. Its membership comprises the New South Wales and Queensland Ministers responsible for the industry, coal mine proprietors and mining unions. The Australian Mining Industry Council and the ACTU have observer status.

An advisory committee, whose membership reflects that of the ACCC, meets frequently (approximately monthly) and reports to the ACCC and through it to the relevant Commonwealth and State Ministers.

National Oil Supplies Advisory Committee—NOSAC

The National Oil Supplies Advisory Committee was formed in 1983 by the amalgamation of separate Commonwealth/industry and Commonwealth/State bodies set up during the period of tight oil supply in 1979. Representatives of the Commonwealth Government, State government energy authorities and major domestic oil producers and refiners meet about twice a year to review the situation and outlook for domestic and international oil supplies. Matters discussed include oil production, new oil and gas developments, imports, exports, stock levels, regional shortages, industrial relations, shipping, technical matters and government policies affecting the oil industry.

National Petroleum Advisory Committee—NPAC

Membership of NPAC is drawn from agricultural, general aviation, fishing, manufacturing, mining, oil, shipping and transport industries, the trade union movement and motorists' organisations, as well as Commonwealth, State and Territory Governments. The Department of Primary Industries and Energy provides the Secretariat for NPAC. In accordance with the NPAC recommendations, the Commonwealth Government has enacted the *Liquid Fuel Emergency Act 1984* and established, with the States and the Northern Territory, the National Fuels Emergency Consultative Committee.

National Fuels Emergency Consultative Committee—NFECC

The NFECC, chaired by the Commonwealth and comprising officials of the Commonwealth, States and the Northern Territory, was established in late 1983 to consult and advise governments on matters relevant to the preparation for, and detailed management of, a national liquid fuels crisis; and to act as the prime channel of consultation between governments in the event of such a crisis.

Australian Nuclear Science and Technology Organisation—ANSTO

ANSTO was established as a successor to the Australian Atomic Energy Commission (AAEC) pursuant to the *Australian Nuclear Science and Technology Organisation Act 1987*. For more details, *see* Chapter 22, Science and Technology.

Energy research and development statistics

Estimates of the expenditure on energy R & D carried out in Australia during 1984–85, and classified by energy objective, are presented in the table below.

The estimate of manpower resources devoted to energy R & D in Australia during 1984–85 was 2,851 man years. Of this amount, business organisations accounted for 1,033 man years, general government organisations for 937 man years, higher education organisations for 874 man years and private non-profit organisations for 8 man years.

More detailed statistics are contained in the ABS publication *Research and Experimental Development; All Sector Summary, Australia, 1984–85* (8112.0)

ENERGY RESEARCH AND EXPERIMENTAL DEVELOPMENT *(a)* CARRIED OUT IN AUSTRALIA, 1984–85 *(b)* R & D EXPENDITURE BY ENERGY OBJECTIVE *(c)* BY SECTOR *(d)* AND SOURCE OF FUNDS *(e)*

($'000)

		Sector					*Source of funds*	
		Business enterprise (g)		*General government*				
Energy objective	*Total expenditure (b) (f)*	*Private*	*Public*	*Commonwealth*	*State*	*Higher education*	*Industry*	*Government*
Production and utilisation of energy—								
Oil and gas								
Mining extraction techniques	5,756	n.p.	n.p.	141	..	342	n.p.	n.p.
Refining, transport and storage	1,987	1,418	..	..	..	569	n.p.	n.p.
Other	14,179	n.p.	n.p.	12,032	40	1,373	n.p.	n.p.
Oil shale and tar sands	5,626	690	..	4,267	..	669	831	4,794
Total oil and gas	27,547	8,015	100	16,440	40	2,953	8,218	19,329
Coal								
Mining extraction techniques	13,730	8,641	136	4,177	94	682	6,632	7,098
Preparation and transport	13,380	8,025	700	3,597	..	1,058	8,394	4,986
Combustion	6,277	691	2,468	1,090	923	1,106	2,581	3,696
Conversion	10,691	n.p.	n.p.	8,400	..	907	229	10,461
Other	12,439	n.p.	n.p.	1,657	61	2,065	8,382	4,057
Total coal	56,516	27,195	3,506	18,920	1,077	5,818	26,218	30,298
Solar energy								
Heating and cooling	4,983	n.p.	n.p.	434	131	2,292	2,066	2,916
Photo-electric	5,825	1,004	577	1,613	986	1,646	1,220	4,604
Thermal-electric	649	n.p.	n.p	..	50	412	201	448
Total solar	11,456	2,920	975	2,047	1,166	4,350	3,488	7,968
Nuclear								
Non-breeder								
Light water reactor	115	..	..	..	..	115	4	111
Other converter reactor	..	..	..	..	..	..	..	..
Fuel cycle	21,470	n.p.	n.p.	14,976	..	321	n.p.	n.p.
Supporting technologies	5,464	..	..	5,192	..	273	5	5,459
Breeder	..	..	..	..	..	..	..	..
Fusion	5,149	..	..	2,225	..	2,924	63	5,086
Total nuclear	32,197	n.p.	n.p.	22,393	..	3,631	n.p.	n.p.
Other primary sources								
Wind	729	62	308	..	48	312	299	430
Ocean	n.p.	n.p.	n.p.	..	..	n.p.	n.p.	n.p.
Geothermal	n.p.	n.p.	n.p.	..	..	n.p.	n.p.	n.p.
Biomass	1,966	n.p.	n.p.	..	..	918	901	1,065
Other sources and new vectors	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
Total other primary sources	5,483	n.p.	n.p.	1,288	48	1,537	n.p.	n.p.
Total production and utilisation of energy	*133,200*	*46,265*	*5,228*	*61,087*	*2,331*	*18,289*	*44,750*	*88,450*

ENERGY RESEARCH AND EXPERIMENTAL DEVELOPMENT *(a)* CARRIED OUT IN AUSTRALIA, 1984–85 *(b)* R & D EXPENDITURE BY ENERGY OBJECTIVE *(c)* BY SECTOR *(d)* AND SOURCE OF FUNDS *(e)—continued*

($'000)

		Sector					*Source of funds*	
		Business enterprise (g)		*General government*				
Energy objective	*Total expenditure (b) (f)*	*Private*	*Public*	*Commonwealth*	*State*	*Higher education*	*Industry*	*Government*
Conservation of energy								
Industry	9,917	n.p.	n.p.	3,719	5	1,979	3,490	6,427
Residential and commercial	4,803	n.p.	n.p.	371	1,154	676	2,385	2,418
Transportation	n.p.	n.p.	n.p.	n.p.	..	n.p.	n.p.	n.p.
Other	n.p.	n.p.	n.p.	n.p.	..	n.p.	n.p.	n.p.
Total conservation of energy	*24,204*	*n.p.*	*n.p.*	*5,423*	*1,159*	*3,841*	*11,502*	*12,702*
Other energy R & D								
Electric power conversion	2,381	576	213	..	125	1,468	742	1,639
Electricity transmission and distribution	6,126	3,394	806	23	35	1,869	3,868	2,258
Energy storage n.e.c.	1,747	291	462	766	..	229	n.p.	n.p.
Energy systems analysis	2,214	182	113	..	243	1,675	n.p.	n.p.
Other	1,129	n.p.	n.p.	..	66	182	883	246
Total other energy R & D	*13,597*	*n.p.*	*n.p.*	*788*	*469*	*5,421*	*6,574*	*7,023*
Total *(b)*	**171,001**	**62,763**	**9,430**	**67,298**	**3,958**	**27,551**	**62,826**	**108,175**

(a) Refers to R&D activity predominantly directed towards producing, storing, transmitting, utilising and conserving energy. *(b)* Excludes Private Non-profit sector. *(c)* The energy objective categories represent ultimate national needs rather than the immediate objective of the researcher or organisation performing the energy R&D. *(d)* The sector classification used is adapted from the guidelines specified by the OECD for use in the conduct of R&D studies. *(e)* In accordance with IEA practice, source of funds are classified as either industry or government. *(f)* Includes expenditure associated with overhead staff providing indirect services to energy R&D. *(g)* Excludes enterprises in ASIC Division A, i.e. enterprises mainly engaged in agriculture, forestry, fishing and hunting.

Resources

Black coal

Black coal is currently the largest source of primary energy in Australia. By world standards, in relation to present population and consumption, Australia is fortunate in the availability of easily worked deposits of coal. The country's main black coal fields are located in New South Wales and Queensland, not far from the coast and the main centres of population.

Australia's inferred resources of black coal are very large, amounting to over 500 gigatonnes (Gt). At 30 June 1986, Australia's proven resources of black coal were estimated to total 54 Gt of which 34 Gt were considered economically recoverable. These recoverable resources are located largely in the Sydney Basin in New South Wales and the Bowen Basin in Queensland. There are other coal-bearing basins in New South Wales and Queensland, while small deposits are being worked in Western Australia, South Australia and Tasmania. Australian saleable black coal production in 1986–87 was 149 Mt.

For further details relating to the production of black coal in Australia *see* Chapter 15, Mineral Industry. Details about the nature and age of black coal are given in *Year Book* No. 64.

Brown coal

Australia's measured and indicated resources of brown coal are estimated at 43,300 Mt, located principally in Victoria's Latrobe Valley (39,700 Mt). Small deposits exist in other areas of south Gippsland, in south-eastern Victoria at Gelliondale and in the south-central region at Anglesea, Bacchus Marsh and Altona. Deposits are also known at many places along the southern margin of the continent, as far north as central Queensland. Large deposits are being tested in the Kingston area of South Australia, the Esperance area of Western Australia and at Rosevale in the north-east of Tasmania.

Because brown coal has a relatively low specific-energy value and high water content, its utilisation depends on large-scale, low-cost mining and negligible transportation costs in its raw state.

In Victoria, the brown coal industry has reached a high degree of sophistication in mining, on-site development for power generation, briquetting and char manufacture. Production of brown coal in Victoria during 1985–86 was 35 Mt. The brown coal deposits of the Latrobe Valley have been developed by the State Electricity Commission of Victoria (SECV) for the generation of electricity. By the end of 1985–86, about 915 Mt of raw brown coal had been mined.

Petroleum

The prospects of further discoveries of petroleum in Australia are considered to be good, particularly in sedimentary basins off the north-west coast. Consistent with the existing pattern of discoveries, undiscovered oil is likely to be of the light, low sulphur type and more gas fields than oil fields should be found. Assessments by the Bureau of Mineral Resources, Geology and Geophysics indicate that there is a 50 per cent chance of finding at least another 286 gigalitres (GL) (1,800 million barrels) of crude oil in Australia. This compares with demonstrated economically recoverable resources of 242 GL (1,522 million barrels) and demonstrated sub-economically recoverable resources of 20 GL (126 million barrels) as at 31 December 1986.

PETROLEUM RESOURCES *(a)* AS AT 31 DECEMBER 1986

(*Source:* Department of Primary Industries and Energy)

Basin	*Crude oil*	*Gas condensate*	*LPG*	*Sales gas*
	GL	GL	GL	TL
Demonstrated economic *(b)*—				
Gippsland (Vic.)	192	22	45	186
Carnarvon (W.A.)	24	84	28	438
Eromanga (S.A./Qld)	11	—	—	2
Cooper (S.A./Qld)	4	7	14	85
Amadeus (N.T.) and Bonaparte (W.A./N.T.)	10	3	12	187
Perth (W.A.)	—	—	—	2
Bowen/Surat (Qld)	—	—	—	2
Canning (W.A.)	1	—	—	—
Otway (Vic.)	—	—	—	*(c)*
Total	**242**	**116**	**99**	**902**
Demonstrated sub-economic *(d)*—				
Gippsland/Bass (Vic./Tas.)	12	8	5	29
Bonaparte (W.A./N.T.)	1	7	3	44
Carnarvon (W.A.)	6	4	2	400
Eromanga (S.A./Qld)	—	—	—	—
Browse (W.A.)	—	45	—	683
Perth (W.A.)	1	—	—	—
Amadeus (N.T.)	—	—	1	10
Cooper (S.A./Qld)	—	2	2	15
Bowen/Surat/Adavale (Qld)	—	—	—	6
Total *(e)*	**20**	**66**	**13**	**1,187**

(a) Based on the McKelvey classification which sub-divides resources in terms of the economic feasibility of extraction and their certainty of occurrence. *(b)* Demonstrated economic resources are resources judged to be economically extractable and for which the quantity and quality are computed from specific measurements and extrapolation on geological evidence. *(c)* Gas resource very small. *(d)* Demonstrated sub-economic resources are similar to demonstrated economic resources in terms of certainty of occurrence but are judged to be sub-economic at present. *(e)* Discrepancies between totals and sums of components are due to rounding.

Crude oil and condensate

Indigenous production, at 31,503 megalitres (543 thousand barrels per day) of crude oil and condensate in 1986–87, was only 0.7 per cent less than the peak level production in 1985–86. Since 1984–85, new wells came on stream in the Bonaparte and Harriet basins while production from Amadeus and Cooper-Eromanga also increased. In 1986–87, production in Gippsland basin dropped by 5.1 per cent from the 1985–86 level.

Exports of crude oil and condensate in 1986–87 increased by 13 per cent compared with 1985–86 and at 5,702 megalitres, was only 2.0 per cent below the level of exports in the peak year 1984–85. During 1986–87, more than 84 per cent of the exported crude oil and condensate originated from Bass Strait. The main markets were U.S.A., Singapore and Japan.

Liquefied petroleum gas

Liquefied petroleum gas (LPG) is a valuable co-product of oil and gas production and petroleum refining. The major constituents of LPG are propane, propylene and iso- and normal-butane, which are gaseous at normal temperatures and pressures and are easily liquefied at moderate pressures or reduced temperature. Operations involving LPG are expensive in relation to other liquid fuels because LPG has to be refrigerated or pressurised when transported and stored. LPG is an alternative transport fuel for high mileage vehicles in urban areas as well as a petrochemical feedstock and a traditional fuel.

Identified economically recoverable resources of LPG at June 1987 of 97,000 megalitres (ML) are concentrated in Bass Strait, the North West Shelf and the Cooper Basin.

Production of naturally occurring LPG in Australia in 1986–87 was 3,927 ML (2,878 ML Bass Strait and 964 ML Cooper Basin), virtually all being extracted from crude oil and natural gas from the Bass Strait fields. About 68 per cent of Australia's LPG production is exported (2,675 ML in 1986–87)—mainly to Japan. Domestic consumption of 2,038 ML in 1986–87 was met by 736 ML of product obtained from refineries with supply shortfalls being met by naturally occurring Bass Strait product and import.

PETROLEUM PRODUCTION IN AUSTRALIA

(*Source:* Department of Primary Industries and Energy)

Year	*Crude oil and Condensate*	*LPG (a)*	*Natural Gas*
	ML	ML	GL
1981–82	22,378	3,033	11,550
1982–83	22,069	2,909	11,654
1983–84	26,828	3,132	12,097
1984–85	30,956	3,864	12,963
1985–86	31,734	4,016	14,278
1986–87	31,503	3,927	14,683

(*a*) Naturally occurring.

North West Shelf Project

On 2 August 1985, the Joint Venture Participants (JVP) announced the signing of formal sales contracts for the export of Liquefied Natural Gas (LNG) to Japan from the North West Shelf project. The project is the largest single resource development program ever undertaken in Australia. Exports are to commence in October 1989 and will build up to six million tonnes a year from 1995, under take or pay provisions, until 2008. It is expected that some $50 billion, in dollars of the day terms, in export revenue will be generated. North West Shelf gas will be sold to five electricity and three gas utilities which supply a combined market of some 90 million people.

The project is estimated to have a total capital cost of $12 billion, excluding LNG tankers. Of this, $2,100 million has been spent by the JVP for the supply of natural gas to the domestic markets of south-west Western Australia and the Pilbara comprising the North Rankin 'A' platform, a 134 km submarine pipeline, the onshore domestic gas plant and associated site engineering services. The State Energy Commission of Western Australia (SECWA) also constructed a 1,500 km pipeline to service the domestic markets.

The second phase, the export of LNG, currently estimated to cost $9.8 billion, includes on-shore LNG plant ($3,500 million), two more off-shore production platforms, further drilling and pipelines, site engineering and the provision of infrastructure and housing in Karratha. Seven 125,000 m^3 LNG tankers (costing about $1 billion) will also be required.

On 12 March 1985 it was announced that the domestic gas contracts had been renegotiated in order to alleviate a potentially serious revenue shortfall for SECWA. This involved, in part, the waiver by the Commonwealth of a proportion of its share of domestic gas royalties in favour of the State.

The National Liaison Group (NLG) on the North West Shelf was subsequently established to serve as a forum for the exchange of information with a view to increasing Australian content in contracts and purchase orders for the project. It comprises representatives of the Commonwealth and State Governments, trade unions and industry associations together with the JVP. The Commonwealth Minister for Primary Industries and Energy is joint chairman with the Western Australian Minister for Minerals and Energy. The aim of the NLG is to maximise Australian content consistent with cost, quality and performance criteria. The fundamental principle is that Australian industry should have a full and fair opportunity to compete in tenders for the project.

The North West Shelf project is one of national significance, with the potential for major impact on Australia's international trading position.

Oil shale

A description of the nature and location of Australian oil shale deposits was given in *Year Book* No. 67.

Major investigations into oil shale development have concentrated on the Condor, Rundle and Stuart deposits.

Uranium

Australia has about 28 per cent of the Western world's low-cost uranium reserves. Deposits occur in the Northern Territory, Western Australia, South Australia and Queensland. The major use for uranium is as fuel in nuclear reactors. It is also used for power generation in atomic energy research programs.

Uranium was first discovered in Australia in 1894 but systematic exploration did not begin until 1944 following requests from the United Kingdom and United States Governments. A number of significant deposits were identified, particularly in the Katherine/Darwin region of the Northern Territory and the Mt Isa/Cloncurry region in Queensland. This initial phase of exploration activity was from 1944 to the late 1950s, reaching a peak in 1954.

In the period from 1954 to 1971, about 9,120 tonnes of uranium oxide concentrate was produced from five plants at Rum Jungle, Moline and Rockhole in the Northern Territory, Mary Kathleen in Queensland and Radium Hill in South Australia. Uranium requirements for defence purposes decreased in the early 1960s, causing uranium demand and prices to fall rapidly, and exploration for uranium virtually ceased.

A revival of interest in the late 1960s was encouraged by the announcement of a new export policy in 1967, designed to encourage exploration for new uranium deposits while conserving known resources for future needs in Australia. The renewed activity which followed was very successful—major discoveries were made in South Australia: Beverley (1969), Honeymoon (1971), Olympic Dam (1975); in the Northern Territory: Ranger (1970), Nabarlek (1970), Koongarra (1970), Jabiluka (1971); and in Western Australia: Yeelirrie (1970). These and other discoveries have led to substantial additions to Australia's reasonably assured uranium resources which, at June 1986, totalled 462,000 tonnes of uranium recoverable at less than $US80 per kg U.

Commercial production at the Ranger mine commenced in 1981 at a planned rate of 3,000 tonnes U_3O_8 per annum. Plans are in progress to expand production to 4,500 tonnes per annum by 1989, with a further increase to 6,000 tonnes two or three years later. The Nabarlek deposit was mined in 1979 and the ore was stockpiled for later treatment. Production at a planned rate of 1,000 tonnes U_3O_8 per annum, commenced in 1980 and is scheduled to end in 1988. Total production to the end of June 1987, as reported by the mine operators amounted to:

Ranger—18,010t U_3O_8
Nabarlek—9,707t U_3O_8

The Olympic Dam mine received development approval in early 1984 and construction of the mine was undertaken in 1986. Production of uranium is scheduled to commence during 1988 at a planned rate of 2,000 tonnes U_3O_8. The mine will also produce copper and gold.

The Australian Government's uranium policy permits exports of uranium from only the Ranger and Nabarlek mines in the Northern Territory and the Olympic Dam mine in South Australia.

All exports of Australian uranium will continue to be subject to the most stringent safeguards. Uranium produced in Australia is exported in the form of yellowcake for use in nuclear reactors for the generation of electricity and for the production of radioisotopes and radio pharmaceuticals.

Production of uranium for 1986 was 4,899 tonnes U_3O_8 and exports were 4,164.5 tonnes valued at around $373 million. The *Nuclear Non-Proliferation (Safeguards) Act 1987* gives domestic effect to Australia's international nuclear non-proliferation obligations which require domestic legislation. The legislation establishes a system of permits for the possession and transport of nuclear material (defined to cover uranium, thorium and plutonium), and other physical items such as equipment and material used in nuclear reactors. The permit and related provisions also deal with the possession and communication of sensitive information about nuclear technology, in circumstances where that information is not already a matter of public record. The legislation is administered by the Australian Safeguards Office.

Thorium

Thorium is a radioactive mineral that is about three times as abundant as uranium, but occurs in fewer geological environments and in lower grade accumulation. Most of the world's resources of thorium occur in monazite, a complex phosphate recovered primarily for its rare-earth content. Primary thorium minerals are resistant to oxidation and form economically important placer deposits as well as hard-rock deposits.

In Australia, monazite is produced from titanium-bearing mineral sands on the east and west coasts. Other thorium occurrences are known, but are uneconomic. Australia presently supplies about 65 per cent of the world's traded monazite. Exports from Australia of thorium and thorium-containing ores require the approval of the Minister for Primary Industries and Energy under the Customs (Prohibited Exports) Regulations.

Solar energy

Solar energy, like wind, tidal and wave energy is, for all practical purposes, inexhaustible and shares with these other energy sources a number of properties which, in general, make it difficult and costly to collect, store and transform into useful work. These inherent characteristics include a relatively low energy intensity and a variation in the availability of the supply arising from geographic, seasonal and daily effects.

Nevertheless, for specific applications such as domestic water and space heating, solar energy is already beginning to play a valuable role in Australia. Some 5 per cent of Australian residences have a domestic solar water heater with the local industry currently producing around 30,000 units annually. The use of passive solar design principles in housing is also increasing as low-cost passive designs are developed.

The best prospects for using many solar energy technologies are in areas of Australia remote from the major electricity grids, where electricity costs can be anywhere from 3 to 20 times those in metropolitan areas. Photovoltaic (solar) cells are being used to meet the electrical requirements of remote telecommunication repeater stations, navigational buoys, water pumps and homestead-scale power supply systems. A locally-developed transportable photovoltaic power supply system has been designed to meet the lighting, refrigeration, communication and water pumping requirements of a small community.

Researchers at the University of New South Wales have developed techniques for producing photovoltaic cells with an energy conversion efficiency of 19 per cent using commercial grade silicon material. In contrast, the efficiency of commercially available photovoltaic cells typically does not exceed 14 per cent.

Wind energy

Using data from the Bureau of Meteorology wind stations, CSIRO has undertaken a continental wind assessment of Australia. In addition, a number of site specific wind resource assessments have been undertaken by CSIRO and other bodies. Broadly, these studies indicate that while the bulk of the Australia's inland has relatively low wind speeds, some coastal and island localities have good wind energy resources, notably on the Western Australian, South Australian and Tasmanian coasts, in Bass Strait and on Lord Howe Island.

At present the use of wind energy in Australia is confined principally to mechanical windmills for water pumping and small wind turbine generators for remote areas. It is unlikely that, in the short to medium term, wind energy will be able to compete on a widespread and large scale with coal for electricity generation in Australia. However, wind turbines could find increasing application in remote areas where wind resources are favourable and which currently rely on diesel fuel for electricity production.

Four imported wind turbines in the 20–55 kW range have been demonstrated in Western Australia and Victoria, with two of the machines on Rottnest Island, one at Fremantle and one at Ballarat. A large, imported 150 kW wind turbine is located at Malabar headland in the eastern suburbs of Sydney.

Locally manufactured wind turbines in the 30–60 kW range are also operating in Australia including a group of six at Esperance which form the basis of Australia's first wind farm. Electricity produced by the wind farm is used to supplement that provided to the Esperance grid by diesel generators.

Geothermal energy

The most intensive and well-documented study in Australia of subsurface temperatures has been made using bore holes in the Great Artesian Basin. In this basin, about 20 per cent of the indexed bore holes penetrate to depths greater than 1,000 metres and, since the thermal gradients are generally above 30°C per 1,000 metres, it is reasonable to assume that hot water can be obtained from such aquifers. However, of the total number of indexed bores, only a very small proportion have water temperatures exceeding 100°C.

In general, it appears that cost constraints will largely restrict the use of our geothermal resources to the supply of hot water for space heating and light industrial purposes. However, for remote homesteads and communities in areas of the Great Artesian Basin, hot artesian bores may well be used to provide an economically viable alternative source of electricity to that obtained from diesel generators.

An Australian company has developed an organic rankine cycle heat engine which can utilise low grade sources of heat (80–100°C) to generate electricity. A 20 kW version of the engine has been used as the basis for Australia's first geothermal power plant at Mulka Station in the north-east of South Australia. There are also plans to construct a larger scale power plant (120 kW) at Birdsville in Queensland.

Ocean energy

A number of potential energy sources are associated with the world's oceans, including mechanical energy in waves and tidal action and thermal energy absorbed by ocean waters.

Tidal energy is a dispersed energy source derived from regular fluctuations in the combined gravitational forces exerted by the moon and the sun at any one point on the earth's surface as the earth rotates. The mean tidal range in the open ocean is about one metre, but under suitable hydraulic and topographical conditions, much higher tides than this can build up in coastal locations.

Theoretically, around Australia there are very large amounts of tidal energy available, especially on the north-west coast where the tidal range is as great as 11 metres. Studies into prospective tidal power-plant sites in north-western Australia were conducted in 1965 and 1976. The 1976 study concluded that, at that time, the cost of generating electricity at this location would be more than three times the cost of electricity generated by a coal fired power plant. This estimate did not take into consideration the significant costs which would be involved in the transmission of electricity produced by the tidal plant to population centres.

Waves are generated by the interaction of the wind with large bodies of water. The amount of energy transferred depends on the wind speed, the distance over which it interacts with the water, and for how long the wind blows. There are plans by a local company to establish the world's largest wave power plant at Esperance in Western Australia. It is envisaged that the plant will have a capacity of 1 MW and will be used to supplement the existing Esperance electricity supply which is provided by diesel generators and a wind farm.

The temperature difference between the surface of the ocean and water located at depth can be as high as 25°C, particularly in equatorial regions (20°S to 20°N). Power cycles can be devised to operate between these temperature differences, thereby providing a source of electricity. No ocean thermal energy conversion systems are ready for commercialisation at this time.

Biomass

Biomass includes crops, wood, agricultural and forestry residues, and animal wastes. Currently, only two forms of biomass are used significantly as energy in Australia. These are firewood and bagasse, both converted to energy by direct combustion.

Approximately 5.5 megatonnes of firewood are currently used annually in Australia, equivalent in energy terms to about 86 petajoules, or 2.5 per cent of Australia's total energy consumption. This proportion of consumption is expected to remain stable through the 1980s.

Bagasse is the fibrous residue remaining after extraction of the juice from sugar cane. It is the major fuel used in the sugar industry, providing about 71 petajoules, or 2.1 per cent of Australia's total energy consumption.

Biomass also has a possible use as a source of liquid fuels for transport, particularly ethanol and methanol. In 1979, the CSIRO completed a survey of the potential for the production of these fuels from agricultural and forestry resources in Australia. The resources considered were both new energy crops and forest plantations, as well as the residues from existing crop and forest production. In estimating potential new crop production, it was assumed that all land with suitable climate, soil and terrain for an energy crop would be available for energy farming except land at present under crops or sown pastures. The total biomass resources considered could provide a net liquid fuels output of 460 petajoules, or about 46 per cent of energy currently used as liquid fuel in road transport vehicles and off-road vehicles (e.g. agriculture, mining and construction equipment). This is a net figure, taking into account the liquid fuel used in production. It does not take into account socio-economic considerations such as more profitable or socially desirable use of the land available for new crops, and must be considered as an upper limit only.

Although technologies have been developed to convert biomass to liquid fuels, studies have shown that liquid fuel derived from biomass is not competitive with petroleum-based fuels at this stage.

Crude oil marketing and pricing arrangements

After a review in the first half of 1987 of the marketing arrangements for Australian crude oil, the Government completely deregulated crude oil marketing with effect from 1 January 1988. The review began with the issue in February 1987 of a discussion paper, *Marketing Arrangements for Indigenous Crude Oil*, and took account of the views of the industry, State governments, and trade unions.

Deregulation allows refiners and all crude oil producers to negotiate freely the quantities and prices of crude oil they buy and sell, without government involvement. The decision to deregulate means:

- There is no longer any obligation on refiners to absorb particular quantities of Australian crude oil under the allocation system which had been in operation, in various forms, since 1965.
- The Government no longer fixes an Import Parity Price (IPP) for such crude purchased under the pricing system which had been in operation since 1978. The IPP was calculated on the basis of the replacement cost of Australian crude oils with imported crudes, with appropriate adjustments for freight costs and quality differentials.
- The Bass Strait Coastal Freight Adjustment Scheme, in operation since 1984, which placed a levy on allocated Bass Strait crude oil for redistribution among refiners as compensation for differential shipping costs, is no longer in operation.

Crude oil producers also gained complete freedom to export crude oil, as an alternative to selling on the domestic market, except in time of emergency. This is subject to other relevant government policies.

The move to a free market, together with crude oil excise concessions announced on 4 June 1987, optimises future crude oil self-sufficiency consistent with the efficient allocation of resources and places the industry on a competitive footing.

Secondary tax arrangements in the petroleum industry

In addition to general taxation arrangements applying to companies in Australia, petroleum production projects are subject to secondary taxes. The type and rate of secondary taxation (resource rent tax, resource rent royalty, or excise and royalties) depends on the location of the petroleum resource, the date of discovery of the petroleum reservoir and the date upon which production commenced.

A *Resource Rent Tax* (RRT) applies to petroleum projects in the majority of Australia's offshore areas beyond the States' territorial seas. Excluded are the Bass Strait and North West Shelf production licence areas and associated exploration permits. Where RRT applies, it replaces excise and royalties which would otherwise have been levied.

A *Resource Rent Royalty* (RRR) policy applies to onshore petroleum projects and provides for the Commonwealth to waive its crude oil excise whenever the relevant State government negotiates an acceptable RRR agreement with the project producers and agrees to a satisfactory revenue sharing formula with the Commonwealth.

Excise applies to crude oil production from the Bass Strait and North West Shelf projects offshore and all onshore areas (except Barrow Island where a RRR applies). Excise also applies to LPG produced from offshore projects.

Crude oil excise is based on the annual level of crude oil sales from individual production areas and is levied as a percentage of the realised price received by producers.

Different excise scales are applicable to oil production depending upon the date of discovery of the production area and the date when the area was first developed. In the case of new offshore projects to which excise and royalty apply, and all onshore fields, the first 30 million barrels of crude oil production are exempt from excise. Production beyond this level is subject to the appropriate excise rate.

Oil discovered before 18 September 1975 ('old' oil) attracts a higher rate of excise than oil discovered on or after this date ('new' oil). An 'intermediate' scale also applies to oil produced from 'old' oil production areas that were not developed as of 23 October 1984. However, in the case of all onshore fields that commenced production after 1 July 1987, production in excess of 30 million barrels is subject to 'new' oil excise.

A *Commonwealth Royalty* is also levied on offshore petroleum production except in the case where RRT applies. Proceeds are shared on a 40:60 basis by the Commonwealth and the appropriate State or Territory. Thus, Victoria receives a share of the royalty from petroleum produced from Bass Strait, and Western Australia receives a share of the royalties from the North West Shelf. Onshore petroleum rights are vested in the State and Northern Territory Governments and the Commonwealth does not generally receive a share of this royalty.

Pricing of liquefied petroleum gas—LPG

The Commonwealth Government sets the price that producers receive for LPG sold for automotive and traditional domestic, commercial and industrial uses. The current pricing arrangements for naturally-occurring and refinery-produced LPG were introduced on 1 November 1986 following a review of LPG pricing policy. Under these arrangements, adjustments to the maximum wholesale price are made on 1 October and 1 April each year. The price is determined at $20 a tonne above the average export parity price of Bass Strait propane for the six-month period ending on the last day on the previous August for the 1 October adjustments, and the last day of the previous February for the 1 April adjustments. These arrangements do not apply to non-traditional commercial, industrial and petrochemical uses or exports. In these areas the price is determined by commercial negotiation.

Reticulated energy

The two main forms of energy reticulated throughout Australia are gas, of which almost 98 per cent is natural gas; and electricity, the majority of which is generated by coal-fired thermal power stations.

Electricity and gas establishments in Australia

The census of electricity and gas industries covers distribution as well as production and is conducted as a component of the Australian Bureau of Statistics' integrated economic statistics system. This system has been developed so that data from each industry sector conform to the same basic conceptual standards, thereby allowing comparative analysis between and across different industry sectors. The results of this census are therefore comparable with economic data collections undertaken annually for the mining and manufacturing industries and periodically for the retail and wholesale trade, construction, transport and selected services industries.

The following table shows a summary of operations of electricity and gas establishments for 1984–85. Further details are available in the publication *Electricity and Gas Establishments: Details of Operations, Australia 1984–85* (8208.0).

ELECTRICITY AND GAS ESTABLISHMENTS—SUMMARY OF OPERATIONS, 1984–85

State or Territory	Establishments at 30 June	Employment at 30 June			Wages and salaries	Turnover	Stocks		Purchases, transfers in and selected expenses	Value added	Fixed capital expenditure less disposals
		Males	Females	Total			Opening	Closing			
		No.	No.	No.	$m	$m	$m	$m	$m	$m	$m
New South Wales—											
Electricity . . .	34	27,222	2,807	30,029	711.5	4,374.7	358.8	313.1	2,494.5	1,834.5	979.8
Gas	20	2,213	580	2,793	55.9	431.7	30.8	25.0	271.6	154.4	37.0
Queensland—											
Electricity . . .	11	10,918	1,501	12,419	293.2	1,869.1	142.4	117.9	991.5	853.2	589.4
Gas	7	619	133	752	15.6	97.4	8.3	8.0	48.3	48.8	5.9
Other States and Territories (*a*)—											
Electricity . . .	38	37,013	3,150	40,163	996.1	3,910.5	213.2	200.2	1,728.8	2,168.6	1,192.5
Gas	7	5,956	1,016	6,972	157.9	1,126.0	32.7	36.9	508.5	621.8	341.1
Australia—											
Electricity . . .	**83**	**75,153**	**7,458**	**82,611**	**2,000.8**	**10,154.4**	**714.5**	**631.2**	**5,214.8**	**4,856.3**	**2,761.6**
Gas	**34**	**8,788**	**1,729**	**10,517**	**229.4**	**1,655.2**	**71.8**	**70.0**	**828.5**	**825.0**	**384.1**

(*a*) At the end of June 1985 the number of establishments were; Victoria—electricity 14, gas 1; South Australia—electricity 13, gas 2; Western Australia—electricity 6, gas 2; Tasmania—electricity 2, gas 1; Northern Territory—electricity 2 and Australian Capital Territory—electricity 1, gas 1.

Electricity

Responsibility for public electricity supply rests with the State governments, which control electricity production and distribution through public authorities. The Commonwealth Government's major direct role in the electricity supply industry is its responsibility for the Snowy Mountains Scheme.

Hydro-electric resources

With the exception of Tasmania, Australia is generally not well-endowed with hydro-electric resouces because of low average rainfall and limited areas of high relief. Major hydro-electric potential is confined to Tasmania and the Great Dividing Range areas of Victoria, New South Wales and Queensland, with some small potential on rivers draining into the Timor Sea in Western Australia and Northern Territory.

The practical potential of hydro-electric power in Australia has been estimated at 24,000 gigawatt hours (GWh) per year, of which about 60 per cent has currently been developed. In 1985–86, hydro-electric generation was 14,917 GWh.

At 30 June 1986 the installed hydro-electric generating capacity of 7,028 megawatts (MW) represented 21 per cent of total installed capacity.

Future hydro development will be mainly limited to environmentally acceptable sites in Tasmania and, to a lesser extent, North Queensland, as most of the low cost resource elsewhere has already been developed. Although hydro-electric power stations will continue to be constructed into the 1990s and probably beyond, hydro's share of total generation will decline as increasing load is met mainly by coal-fired power stations.

Snowy Mountains Hydro-Electric Scheme

The Snowy Mountains Scheme is a dual purpose complex which supplies water for generation and irrigation. It is located in south-eastern Australia, and on its completion was one of the largest engineering works of its type in the world. It impounds the south-flowing waters of the Snowy River and its tributary, the Eucumbene, at high elevations and diverts them inland to the Murray and Murrumbidgee Rivers through two tunnel systems driven through the Snowy Mountains. The scheme also involves the regulation and utilisation of the headwaters of the Murrumbidgee, Tumut, Tooma and Geehi Rivers. The diverted waters fall some 800 metres and together with regulated flows in the Geehi and Tumut River catchments generate mainly peak load electricity for the States of New South Wales, Victoria and the Australian Capital Territory as they pass through power stations to the irrigation areas inland from the Snowy Mountains.

A special article on the scheme appeared in the Energy Chapter of *Year Book* No. 70.

Electricity generation and transmission

The following table shows details of thermal and hydro electricity generated in Australia during recent years.

ELECTRICITY (*a*)—THERMAL AND HYDRO

Year	*Million kWh*
1980–81	100,782
1981–82	104,975
1982–83	105,933
1983–84	111,696
1984–85	119,188
1985–86	124,369

(*a*) Figures represent estimates of total electricity generated by public utilities, factories generating for their own use, and factories supplying electricity for domestic and other consumption.

Gas

Natural gas was not discovered in any quantity until the 1960s. Before then, coal gasification was Australia's main source of reticulated gas. Over the past 20 years about 7,500 km of pipeline have been laid to link the gasfields with the major mainland metropolitan and urban centres. The distribution networks within these centres encompass a further 50,000 km of mains which supply about 2 million domestic, commercial and industrial customers Australia wide.

Whereas in the electric power industry almost all utilities are in the public sector, gas reticulation is a mixture of public and private enterprise with significant interstate activity. More details are provided within the State segments following.

New South Wales

Department of Energy

As part of a broader restructuring of the State's energy supply industries, the Energy Authority of New South Wales was abolished and a new Department of Energy created on 1 July 1987 under the provisions of the *Energy Administration Act, 1987*. The new Department continues the activities of the former Energy Authority and has added roles and functions in relation to the electricity councils and the Electricity Commission.

The legislation confers broad powers on the Department to co-ordinate and develop the public electricity supply industry. The functions of the Department include the promotion of the wise use of electricity, especially its use for industrial and manufacturing purposes and for primary production. Guidelines are given to electricity supply authorities on various aspects of their activities such as the framing of electricity tariffs, public lighting and the standardising of materials and equipment.

The Department administers the Special Assistance Scheme, which provides subsidies to electricity supply authorities to assist them to maintain their supply system and to implement various tariff rationalisation measures introduced by the State government. The subsidy in 1986 amounted to $32.75 million.

The Department of Energy continues to administer the Rural Electricity Subsidy Scheme which terminated on 30 June 1982. Under the scheme, the rural electrical development of the State has now been virtually completed in areas where the extension of supply is economically feasible. Electricity supply authorities receive subsidies towards the cost of new rural lines. At 30 June 1987, the scheme was committed to the payment of $46,924,963 in subsidies, of which $43,566,598 had been paid.

The Traffic Route Lighting Subsidy Scheme provides for financial assistance to councils towards the cost of installation of improved lighting on traffic routes traversing built-up areas with the objective of reducing the incidence of road accidents at night.

Electricity Commission of New South Wales and electricity supply authorities

The main function of the Commission is the generation and transmission of electricity, which it sells in bulk to distributing authorities (mainly local government bodies) throughout a large part of the State, to the government railways and to certain large industrial consumers.

As the major generating authority, it is also responsible for the development of major new power sources except in the Snowy Mountains region.

The retail sale of electricity to the public is, in general, carried out by separate electricity supply authorities. At 30 June 1986 there were 26 retail supply authorities throughout the State, comprising 23 electricity county councils (consisting of groups of shire and/or municipal councils), 1 city council, 1 shire council, and 1 private franchise holder.

Generation and transmission

Of the State's electrical power requirements during the year ended 30 June 1986, almost all was generated in New South Wales (over 93 per cent by six major thermal power stations and the balance from the Snowy Mountains Hydro-Electric Authority and other hydro-electric stations). Interchange with other States and other small generating authorities in New South Wales was negligible.

At 30 June 1986 the major power stations of the State system of the Electricity Commission of New South Wales and their effective capacities were as follows: Bayswater (Hunter Valley), 1,980 MW; Liddell (Hunter Valley), 1,840 MW; Munmorah (Tuggerah Lakes), 1,200 MW; Vales Point (Lake Macquarie), 1,890 MW; Eraring (Lake Macquarie), 2,648 MW; and Wallerawang (near Lithgow), 1,030 MW. The total nominal capacity of the Electricity Commission's system as at 30 June 1986 was 11,520 MW. The greater part of the Commission's generating plant is concentrated within a 185 km radius of Sydney.

Several local government bodies operate their own power stations and generate a portion of their requirements which is supplemented by interconnection with the system of the Electricity Commission. The aggregate effective capacity for the whole of New South Wales systems and isolated plants was approximately 11,555 MW at 30 June 1986 while the number of ultimate consumers at this date was 2,251,361.

The retailing of electricity to 97 per cent of the population of New South Wales is in the hands of local distributing authorities, which obtain electricity in bulk from the Commission's major State network. This network of 500 kV, 330 kV, 220 kV, 132 kV, 66 kV and some 33 kV transmission lines links the Commission's power stations with the load centres throughout the eastern portions of the State, extending geographically over 650 kilometres inland.

New development

Bayswater Power Station, which is situated in the Hunter Valley, was completed in 1987. It has a total capacity of 2,640 MW. Two 660 MW units are being installed at Mount Piper Power Station which is located on the western coalfield near Wallerawang. Commissioning of the Mount Piper station is planned for the early 1990s.

Construction of a double circuit 500 kV transmission line between Eraring and Kemps Creek, west of Sydney is complete. A double circuit 500 kV transmission link operating initially at 330 kV has been constructed from Bayswater Power Station to Mount Piper Power Station. An extension to Marulan is planned to interconnect with the existing transmission system between the Snowy Mountains and Sydney.

Hydro-electricity

The greater part of the hydro-electric potential of New South Wales is concentrated in the Snowy Mountains area (*see* page 641). Apart from this area, major hydro-electric stations are in operation at the Warragamba Dam (50 MW) and Hume Dam (50 MW). In addition, there are five smaller hydro-electric installations in operation in various parts of the State. A pumped-storage hydro-electric system to produce 240 MW has been installed as part of the Shoalhaven Scheme in conjuction with the Metropolitan Water Sewerage and Drainage Board.

Gas reticulation

Natural gas (NG) was made available to Sydney consumers with the completion of an overland supply pipeline from the Moomba field in South Australia in 1976. During the following five years, lateral pipelines were completed to Wollongong (1978), Bowral-Mittagong (1979), Goulburn (1980), and Canberra, Queanbeyan and Wagga Wagga (1981). A major trunk line between Sydney and Newcastle was completed in 1982.

With the connection of natural gas pipelines into existing reticulation systems, the use of manufactured (usually coal) or petroleum gas is gradually being superseded in the main population centres of the State. By the end of 1986, more than half the Sydney homes with reticulated gas supply had been converted to the direct use of natural gas, with this program being scheduled for completion in 1991. At December 1986 Sydney users of direct natural gas totalled about 237,000 residential and 141,000 other (mainly commercial/industrial).

A smaller number of regional centres not yet connected to the natural gas distribution network still retain their own manufactured gas production and reticulation systems. These systems are operated either by local government or by commercial interests. However, together they account for less than 3 per cent of total sales in New South Wales.

The total amount of gas (all types) available for issue through mains in New South Wales was 81,725 terajoules in 1984–85, 92,532 terajoules in 1985–86 and 93,689 terajoules in 1986–87.

Work still in the development stages includes extraction of methane gas from coal seams south of Sydney and the investigation of potential bulk natural gas storage facilities adjacent to the main population centres.

Victoria

State Electricity Commission—SEC

The SEC is Australia's largest electricity supply authority and individual coal producer. It is a semi-government authority with the principal responsibility of generating or purchasing electricity for supply throughout Victoria. It may own, develop and operate brown coal open cuts and briquetting plants and develop the States's hydro-electric resources. It is required to meet, from its own revenue, all expenditure involved with operating its power and fuel undertakings and to provide for statutory transfers to the consolidated revenue of the State. In 1985–86 its revenue was $1,779 million. At 30 June 1986 it had total fixed assets of $8,607 million and a staff of 22,045.

The SEC was established by an Act of the Victorian Parliament in 1921 and now operates under the *State Electricity Commission Act 1958*. Since it began operating, the SEC has expanded and co-ordinated the generation, purchase and supply of electricity on a State-wide basis to the stage where its system provides almost all the electricity produced in Victoria and its transmission covers almost the entire population of the State. At 30 June 1986 it distributed electricity directly to 1,457,000 customers and indirectly to a further 279,300 through 11 metropolitan councils which buy power in bulk for retail distribution under franchises granted by the Victorian Government before the SEC's establishment.

Existing electricity system

The SEC Act requires the SEC to apply the natural resources of the State. Of the State's recoverable fossil fuel reserves, brown coal represents 94.6 per cent, natural gas 2.6 and oil 2.8. The SEC therefore has committed itself to increasing the proportion of total Victorian requirements met with coal based energy.

Victoria's electricity system is based upon the State's extensive brown coal resource in the Latrobe Valley, 140 to 180 km east of Melbourne in central Gippsland. It is one of the largest single brown coal deposits in the world, amounting to 200,000 megatonnes, of which 52,000 are economically winnable.

The coal is young and soft with a moisture content of 60 to 70 per cent and occurs in thick seams located from relatively close to the surface to a depth of several hundred metres. The coal can be won continuously in large quantities and at low cost by a specialised mechanical plant. The SEC's coal-fired power stations have been established near the coal deposits because the coal's high moisture content would make the coal expensive to transport.

The major brown coal-fired generating plants in the system are the 2,000 MW Loy Yang 'A', the 1,600 MW Hazelwood and 1,450 MW Yallourn 'W' power stations. Other brown coal-fired plants are Morwell (170 MW) and Yallourn 'E' (240 MW). These stations are all located in the Latrobe Valley and generate 80 per cent of the State's electricity requirement.

Other thermal stations are Jeeralang (465 MW) gas turbine station in the Latrobe Valley and Newport 'D' (500 MW) gas-fired station in Melbourne. There are hydro-electric power stations in north-eastern Victoria: Kiewa (184 MW), Dartmouth (150 MW) and Eildon/Rubicon/Cairn Curran (135 MW). Victoria is also entitled to about 30 per cent of the output of the Snowy Mountains Hydro-Electric Scheme and half of the output of the Hume hydro-electric station near Albury.

The SEC's total installed generating plant capacity at 30 June 1986 was 7,003 MW, including both capacity within the State and that available to it from New South Wales. In 1985–86 electricity generated by the SEC in its thermal and hydro-electric power stations, or purchased, totalled 28,151 GWh.

Power station construction

Construction of the Loy Yang 'A' power station complex south-east of Traralgon in the Latrobe Valley was authorised by the Victorian Government in 1976. It is the largest single engineering project undertaken in Australia. Coal-fired, Loy Yang will provide base load electricity for the Victorian grid and almost double the State's generating capacity. The project nominally comprises two 2,000 MW power stations, Loy Yang 'A' and Loy Yang 'B', in eight 500 MW units.

Transmission and distribution

The Victorian electricity distribution system has been completed, except for some isolated and remote areas of the State. Main transmission is by 500, 330, 220 and 66 kV lines which supply the principal distribution centres and interconnection between generating sources.

Three 500 kV transmission lines and six 220 kV lines link the Latrobe Valley stations with Melbourne and the State grid while three 330 kV lines provide the interstate link, two through the Snowy scheme. Bulk distribution of power throughout the main regional areas is by 220 kV lines to terminal stations which reduce the voltage to 66 kV or 22 kV for delivery to zone substations for further distribution. Feeder lines then deliver to distribution substations which in turn reduce the voltage to 415/240 volts for reticulation to individual customers. Some big industrial concerns take power at higher voltages.

The main transmission grid is currently being augmented to provide for increased power from the Latrobe Valley and to meet load growth in north-eastern and western areas of the State and the Mornington Peninsula.

Gas reticulation

The Gas and Fuel Corporation of Victoria is the largest gas undertaking in Australia, the sole reticulator of gas in Victoria, and a major marketer of liquefied petroleum gas (LPG). Constituted on 6 December 1950, it was formed by merging the interests of the privately-owned Metropolitan and Brighton Gas Companies with the State Government. (Through its predecessor, the Metropolitan, the Corporation is descended from the first gas company in Victoria—The City of Melbourne Gas and Coke Company founded in 1850 and incorporated in 1853.)

The merger gave the newly-formed Corporation an unusual status—that of a public authority owned jointly by the State and private shareholders. With its expanded capital structure, the Corporation was able to build a plant at Morwell to gasify indigenous brown coal, with the objective of improving Victoria's gas supply. Commissioned in 1956, the Lurgi high pressure brown coal gasification works supplemented metropolitan gas production until the introduction of natural gas in 1969.

Commercial reserves of natural gas were discovered in the offshore Gippsland Basin in 1965 by Esso-BHP from which the Corporation purchases, under agreement, the State's natural gas requirements.

Supply is drawn from the Marlin, Barracouta, and Snapper fields in Bass Strait, and transported by pipeline to an onshore treatment plant at Longford, near Sale. Before it enters the Corporation's transmission system, an odorant is added to give the gas a distinctive smell, for safety reasons.

The Corporation reticulates gas, 99 per cent of which is natural gas, through a 20,000 kilometre network of underground transmission pipelines and mains to more than one million industrial, commercial, and domestic consumers.

Queensland

Organisation

The electricity supply industry in Queensland operates under a two-tier structure consisting of the Queensland Electricity Commission and seven electricity boards. The Queensland Electricity Commission, under the terms of the *Electricity Act 1976–1986* is responsible for the co-ordination and regulation of the electricity supply industry in Queensland.

The Commission has direct responsibility for electrical safety, loan raising, fixing tariffs and planning the electricity system as well as for construction and operation of major power stations and the main transmission system. It provides electricity to the seven electricity boards and certain special major users of power.

Electricity generation, transmission and distribution

During 1986–87, nearly 97.8 per cent of the State's generation of 21,133 GWh was produced by coal fuelled steam power stations. Two hydro-electric stations in the north of the State provided 2 per cent, while the balance was produced by internal combustion plant located in towns remote from the interconnected grid and by gas turbine plant at several locations. Wivenhoe pumped storage generating station produced 554 GWh at times of peak system load while using 767 GWh for pumping purposes. A further 184.7 GWh was purchased from private producers of electricity for re-distribution to customers within the State-wide interconnected system.

At 30 June 1987, the total generating capacity in the State was 5,126 megawatts (MW), comprising 4,256 MW of coal-fired steam plant, 632 MW of hydro-electric plant, 178 MW of gas turbine plant and 60 MW of internal combustion plant. For the foreseeable future, coal-fired power stations will provide the bulk of the State's electrical energy requirements, augmented by pumped storage and conventional hydro-electric stations for peaking capacity.

At the end of June 1987 the transmission and distribution system within the State comprised 156,663 circuit kilometres of electric lines providing electricity to 1,039,753 customers. The main transmission voltages are 275, 132, 110 and 66 kV. The single wire earth return (SWER) system is used extensively in rural electrification and 49,642 kilometres of this line was in service at 30 June 1987.

New development

The completion of Tarong Power Station in November 1986 brought into operation a generating capacity of 1,400 MW. There are two generating stations presently under construction that will provide an additional 2,100 MW of generating capacity for the State network.

The Callide 'B' power station, located in the central region of the State, near Biloela, will consist of two generating sets each of 350 MW capacity. The station was 85 per cent complete by the end of 1986–87.

Work on the Stanwell power station, near Rockhampton, is proceeding to a schedule proposing first generation in 1993. This station will comprise four sets each rated at 350 MW capacity.

Gas reticulation

Queensland has a reticulated gas system in the Brisbane region and in the cities and towns of Bundaberg, Cairns, Toowoomba and Dalby. By June 1986 there were over 2,908 kilometres of mains laid in these centres and the systems serviced 154,047 consumers. South Brisbane, Toowoomba and Dalby reticulate natural gas, whereas North Brisbane, Bundaberg and Cairns reticulate reformed town gas. Total sales of natural gas in 1985–86 were 17,325 TJ compared with 17,542 TJ in 1984–85. Sales of reformed town gas were 1,053 TJ and 1,062 TJ respectively.

Western Australia

State Energy Commission of Western Australia

On 1 July 1975 the Government of Western Australia combined the State Electricity Commission and the Fuel and Power Commission to form a new organisation known as the State Energy Commission of Western Australia. The Commission is specifically responsible for ensuring the effective and efficient utilisation of the State's energy resources and for providing economical and reliable supplies of electricity and gas.

Electricity generation and distribution

The Commission owns and operates three major thermal power stations. These are located at Muja, (1,040 MW capacity) and Bunbury (120 MW), both using local coal to produce electricity, and at Kwinana (900 MW). Kwinana power station has the capacity to burn coal, oil or natural gas, although natural gas (from the North West Shelf) is the major fuel used. A small (2 MW) hydro-electric station is situated at Wellington Dam near Collie, and there are 20 MW capacity gas turbine generating units at Geraldton, Kalgoorlie and Kwinana.

Two power grid systems operate in Western Australia and supply the electricity needs of 98 per cent of the State's population. The two systems are:

- *The South West interconnected system.* Power from the three major stations is fed to the South West system. This grid services the metropolitan area and the South West and Great Southern areas, including an area extending eastwards to Kalgoorlie and northwards as far as Kalbarri, some 100 km north of Geraldton. Kalgoorlie was brought into the South West grid system in 1984 following construction of a 680 km transmission line from Muja, one of the longest radial feed lines constructed in Australia.
- *The Pilbara interconnected system.* This system was established during 1985–86 and interconnects Karratha, Cape Lambert and Port Hedland. Electricity is supplied from generating plant at Cliffs Robe River Iron Associate's power station at Cape Lambert. The plant is fuelled by North West Shelf natural gas. When necessary, additional power can be drawn from the Commission's stand-by diesel power generating facility at Port Hedland or from Hamersley Iron Pty Ltd's power station at Dampier.

In areas too remote to utilise the interconnected grid systems, the Commission operates 29 diesel power stations. The Commission owns and operates 8 of these stations while the remaining stations are owned by local authorities but operated by the Commission under the Country Town's Assistance Scheme (CTAS). Under this scheme, the Commission operates the electricity undertakings but ownership remains with the shires which are required to raise the funds needed for capital works, including generating plant, distribution extensions and upgrading.

At 30 June 1986, the Commission's generating capacity from its interconnected grid system was 2,177 MW, while the capacity of its supply system in country areas was 162 MW. There were 536,254 customer accounts for electricity throughout the State.

The Commission is also responsible for the design, construction and maintenance of power stations at isolated Aboriginal communities in the Pilbara, Kimberley, Central Aboriginal Reserve and Eastern Goldfields. At 30 June 1986, there were 38 such village power stations funded by the Commonwealth Government.

Gas reticulation

The Commission is the main supplier of gas in Western Australia. It operates an extensive North West Shelf natural gas reticulation system in the Perth metropolitan area as well as smaller country reticulation systems at Geraldton to the north and Pinjarra and Bunbury in the south-west. The Commission also reticulates tempered liquefied petroleum (TLP) gas through a local system at Albany on the south coast.

At 30 June 1986, there were 160,369 customer accounts for natural gas and 2,389 customer accounts for TLP gas.

South Australia

Electricity Trust of South Australia

In 1946 the assets of the Adelaide Electric Supply Co. Ltd were transferred to a newly-formed public authority, the Electricity Trust of South Australia, which became responsible for unification and co-ordination of the major portion of the State's electricity supply, taking over the powers previously vested in the South Australian Electricity Commission. In addition to the powers specified in the *Adelaide Electric Supply Company's Acts, 1897–1931*, the Trust may supply electricity direct to consumers within a district or municipality with the approval of the local authority; arrange, by agreement with other organisations which generate or supply electricity, to interconnect the mains of the Trust with those of other organisations; and give or receive supplies of electricity in bulk.

Capacity and production

At 30 June 1987, the Electricity Trust's installed capacity was 2 680 MW. Its major power stations are Port Augusta Northern Power Station (500 MW), Torrens Island (1 280 MW) and Port Augusta Playford 'B' (240 MW). Of the older stations, Playford 'A' (90 MW) and most of Osborne (240 MW) have been placed on cold storage. The Trust also operates gas turbine stations at Dry Creek (156 MW), Mintaro (90MW) and Snuggery (75 MW) and a small diesel station at Port Lincoln (9 MW).

The Trust supplies approximately 630 000 customers, accounting for over 99 per cent of all electricity consumers in the State. Following the acquisition of seven district council electricity undertakings on Eyre Peninsula during 1986–87, the Trust is now responsible for supplying only 900 customers indirectly through bulk supply. Approximately 3 000 additional customers are supplied by small independent electricity undertakings operating mainly diesel generating plant in remote areas of the State.

The two main fuels used by the Trust are coal from Leigh Creek for the Port Augusta power stations and natural gas from the Cooper Basin for the Torrens Island, Dry Creek and Mintaro stations.

Future developments

To meet future demands, a third 250 MW unit at the Northern Power Station, also fuelled by Leigh Creek coal, is scheduled for commissioning in 1993.

A 500 MW capacity interconnection with the Victorian-New South Wales systems, being constructed, is scheduled for commissioning in 1990.

Gas reticulation

The South Australian Gas Company (SAGASCO), a privately owned company regulated by State legislation, was incorporated by Act of Parliament in 1861. The first gas was produced at Brompton in 1863.

When natural gas became available from the Cooper Basin in the late 1960s, SAGASCO, in 1966, contracted a supply of this indigenous fuel. Deliveries commenced in 1969 and, with the complete conversion of the metropolitan area to natural gas in January 1971, coal carbonising and carburetted water gas plants were shut down.

Under the 1966 contract, SAGASCO paid the producers who, in turn, paid the transportation charge of the Natural Gas Pipelines Authority. In 1974, major changes to contracts and other arrangements were effected. The Pipelines Authority—renamed the Pipelines Authority of South Australia (PASA)—became responsible for purchasing gas at the Cooper Basin and on-selling to customers. The 1966 contract was shortened to expire on 1 January 1988, from which date a new supply contract with PASA takes effect.

Natural gas is reticulated through most of the Adelaide metropolitan area, Angaston and Port Pirie. Liquefied petroleum gas is distributed by reticulation at Mount Gambier and Whyalla, and is available elsewhere as bottled gas.

The conversion of the metropolitan distribution system to natural gas brought marked changes in the Company's operations. The Company is now concerned largely with the distribution and marketing of gas, rather than manufacturing. Great emphasis is placed on marketing gas to industry, where, as a cheap, non-polluting fuel, it is able to compete successfully with other fuels.

Tasmania

A considerable part of the water catchment in Tasmania is at high altitude. The establishment of numerous dams has created substantial artificial storage which has enabled the State to produce energy at a lower cost than elsewhere in Australia and in most other countries. Another factor contributing to the low cost is that rainfall is distributed fairly evenly throughout the year with comparatively small yearly variations. Abundant and comparatively cheap supplies of electricity played an important role in attracting industry to Tasmania.

Hydro-Electric Commission

The Commission was created in 1930, taking over the activities of the Hydro-Electric Department and the existing small hydro-electric installations. Development initially concentrated on hydro-electric generation feeding into a State-wide power grid (King Island from 1951 and Flinders Island from 1968 are outside the grid and are supplied by diesel generators). During 1974, the construction of a substantial oil fired thermal station with a capacity of 240 MW was completed to supplement the continuing hydro development program.

Installed capacity

At 30 June 1987 the generating system had an installed capacity of 2 171 MW. The most recent completion, the Pieman River Power Development (231 MW), was officially opened on 1 May 1987.

Installation of a third 144 MW generator at the Gordon Power Station will bring the capacity at that site to 432 MW and is expected to be completed by March 1988.

Work began in 1982–83 on Stage 2 of the Gordon River Power Development but was halted when the Federal Government refused consent for the project to proceed. The Hydro-Electric Commission then began work (in August-September 1983) on two smaller hydro power schemes in Western Tasmania. These are the King River Power Development, scheduled for completion in mid-1991 and the Anthony Power Development, expected to be commissioned some 18 months later. They will add about 227 MW to the installed capacity of the system.

Gas reticulation

Gas is only a minor energy source in Tasmania. Town gas is manufactured and reticulated only in Launceston. Bottled LPG is a minor domestic, commercial and motor fuel in the State.

Northern Territory

The Power and Water Authority is a Statutory Authority, created on 1 July 1987, with responsibility for the sale of natural gas, electricity generation, distribution, transmission and sale, and water and sewerage services.

In Darwin, the major electricity source is the gas-fired Channel Island Power Station completed in October 1987 with a capacity of 186 MW. In Alice Springs, power is generated at the Ron Goodwin Power Station which operates on natural gas. In Katherine, electricity is generated at the Katherine Power Station, completed in September 1987. Natural gas is also used as a fuel for electricity generation at the Tennant Creek Power Station.

A natural gas pipeline from the Amadeus Basin in Central Australia to Darwin was completed in December 1986, enabling electricity generation in Darwin, Katherine and Tennant Creek to use an indigenous fuel to replace expensive, imported fuel. The Alice Springs Power Station is fuelled by natural gas from Palm Valley via a separate pipeline.

Many small communities in the Territory generate their own power using diesel-fired generating sets and responsibility for these operations has been transferred to the Power and Water Authority.

Australian Capital Territory

Electricity distribution

The supply authority is the A.C.T. Electricity Authority within the Territory. Supply was first made available in Canberra during 1915 and was met from a local steam plant. Connection to the New South Wales interconnected system was effected in 1929. The Authority's electricity supply requirements are met by a Snowy Mountains reservation of 670 GWh and the balance is provided by the Electricity Commission of New South Wales. The locally-owned plant consists of 3 MW diesel alternators which are retained as a standby for essential supplies. The total number of ultimate consumers at 30 June 1987 was 98,201. During the year 1986–87 the bulk electricity purchased was 1,963 GWh and the system maximum demand was 546 MW.

Gas reticulation

Reticulated gas first became available in the Australian Capital Territory in January 1982. Natural gas from the Moomba fields in South Australia is piped to Canberra via a 60 km spur which branches from the main Moomba—Sydney pipeline at Dalton. AGL Canberra Ltd has invested capital of $45 million to set up the infrastructure necessary to service and support a major utility and, to date, has laid over 1,600 kilometres of gas mains, bringing reticulated natural gas within reach of an estimated 46,500 dwellings in 50 suburbs.

During 1986–87, AGL Canberra Ltd reticulated 2,597 terajoules of natural gas to 570 commercial and industrial establishments and about 12,000 homes. Over the next five years the company expects to invest a further $55 million and, in the long term, over 2,500 kilometres of gas mains will service over 50,000 customers in the Territory.

National survey of household energy usage

About 27 per cent of all reticulated electricity and 13 per cent of reticulated gas is consumed by households. To facilitate planning by energy authorities to meet this demand, the Australian Bureau of Statistics conducted a national survey of energy usage by household in private dwellings. The survey sought information on:

- what facilities and major appliances were held by the household at the time of interview;
- the quantity and cost of reticulated gas and electricity consumed by the household over a twelve month period prior to interview;
- the usage patterns for major appliances and reticulated energy consumption recorded in a special diary over a seven day period after the interview.

To determine the significance of seasonal usage patterns, interviews were conducted progressively over the period June 1985 to June 1986 with the sample of over 19,000 households being spread both geographically and temporally to provide, for any State/area, a series of observations over the year.

RETICULATED ENERGY: AVERAGE ANNUAL CONSUMPTION AND EXPENDITURE BY HOUSEHOLD COMPOSITION BY STATE/TERRITORY AND CAPITAL CITIES, 1985–86.

	Household composition								
	One adult and number of children			*Two adults and number of children*			*Three or more adults and number of children*		
	None	*1 or 2*	*3 or more*	*None*	*1 or 2*	*3 or more*	*None*	*1 or 2*	*3 or more*
	SINGLE HOUSEHOLDS IN PRIVATE DWELLINGS ('000)								
New South Wales	312.8	37.1	*4.8	506.3	281.2	104.5	273.8	149.0	21.4
Sydney	223.7	29.0	*	315.1	183.1	61.3	189.4	92.7	12.6
Victoria	245.9	20.7	*6.5	350.9	223.0	69.8	217.6	127.2	20.2
Melbourne	179.9	12.8	*4.4	245.4	164.7	43.0	172.4	92.9	14.6
Queensland	149.8	13.8	*4.5	221.2	131.9	54.6	113.9	74.6	10.4
Brisbane	77.8	*5.8	*	101.2	67.8	21.0	64.1	36.7	*2.9
South Australia	83.4	8.6	*3.1	153.5	78.2	25.0	74.2	36.2	*2.7
Adelaide	62.4	6.2	*2.0	113.8	58.9	16.4	58.8	27.6	*
Western Australia	83.5	10.0	*	132.9	84.7	29.1	67.7	36.1	*3.3
Perth	64.6	9.1	*	102.7	63.6	21.0	53.7	26.9	*
Tasmania	27.7	3.1	*	40.9	29.2	9.7	17.0	11.8	2.6
Hobart (*a*)	12.8	2.0	*	17.5	12.6	3.0	7.0	3.7	*1.0
Northern Territory (*a*)	*3.2	*	*	6.3	9.1	*	*2.4	*2.4	*
Australian Capital Territory	12.8	*1.9	*	19.7	16.3	5.7	13.0	8.6	*
Australia	**919.0**	**96.1**	**20.4**	**431.8**	**853.6**	**300.0**	**779.7**	**445.7**	**61.4**
	AVERAGE ANNUAL CONSUMPTION (MJ)								
New South Wales	15,900	26,900	*34,200	25,100	34,200	37,400	37,100	39,800	51,500
Sydney	15,700	27,000	*	25,700	35,400	40,000	39,700	41,400	53,000
Victoria	29,900	50,600	*70,700	48,300	71,200	80,200	74,500	81,800	78,000
Melbourne	31,100	58,400	*81,000	54,100	79,000	100,300	81,700	91,500	86,900
Queensland	13,200	19,500	*23,700	19,900	27,100	29,400	27,600	30,200	32,100
Brisbane	13,900	*21,000	*	20,800	27,300	32,900	29,300	33,000	*35,200
South Australia	20,400	31,000	*39,700	30,400	41,400	43,100	42,100	47,700	*55,800
Adelaide	21,700	35,900	*45,200	32,100	44,600	47,300	45,200	50,100	*
Western Australia	13,900	22,100	*	20,300	26,800	30,500	28,300	31,300	*28,400
Perth	14,700	23,200	*	20,500	28,300	33,300	30,100	33,800	*
Tasmania	22,900	31,600	*	31,200	37,500	46,600	40,500	43,000	41,300
Hobart (*a*)	24,400	32,400	*	31,100	37,700	50,800	43,100	42,400	*43,700
Northern Territory (*a*)	*16,300	*	*	24,600	32,400	*	*27,400	*41,400	*
Australian Capital Territory	29,400	*41,800	*	36,300	43,800	63,800	43,100	45,500	*
Australia	**19,800**	**31,200**	**44,300**	**30,500**	**43,000**	**46,700**	**46,000**	**50,300**	**55,300**
	AVERAGE ANNUAL EXPENDITURE ($)								
New South Wales	300	449	*598	451	588	642	628	688	829
Sydney	285	438	*	442	591	646	648	696	812
Victoria	397	544	*772	572	756	846	816	909	870
Melbourne	404	563	*820	604	795	948	861	950	895
Queensland	337	469	*502	470	607	652	616	668	705
Brisbane	345	*472	*	471	605	704	628	705	*727
South Australia	348	481	*578	508	659	728	686	784	*839
Adelaide	351	512	*598	507	671	737	705	785	*
Western Australia	342	448	*	467	585	680	628	688	*666
Perth	353	459	*	468	618	712	652	741	*
Tasmania	365	479	*	491	586	695	638	690	656
Hobart (*a*)	386	485	*	493	585	759	666	684	*682
Northern Territory (*a*)	*537	*	*	677	841	*	*700	*1,072	*
Australian Capital Territory	464	*602	*	538	680	894	684	732	*
Australia	**345**	**479**	**624**	**494**	**645**	**710**	**685**	**758**	**808**

(*a*) As reticulated gas was not available at the time of the survey, these averages are for reticulated electricity only.
NOTE: Estimates preceded by the symbol (*) have a relative standard error of between 25 and 40 per cent. Estimates replaced by the symbol (*) have a standard error greater than 40 per cent.

TYPE OF ENERGY USED BY STATE AND STATE CAPITAL CITIES, 1985–86

('000 of single households in private dwellings)

	N.S.W.		*Vic.*		*Qld*		*S.A.*	
Type of energy used	*Sydney*	*Total*	*Melbourne*	*Total*	*Brisbane*	*Total*	*Adelaide*	*Total*
Households using electricity	1,119.5	1,735.1	939.3	1,298.4	381.4	806.9	351.9	474.9
Households not using electricity	*	9.4	*	*1.8	*	*4.2	*	*
Households using gas	367.1	538.2	780.1	971.9	100.2	183.8	221.5	253.5
Reticulated (mains) gas	327.5	398.3	753.3	879.9	77.3	86.2	214.6	223.7
Bottled gas	35.8	126.2	18.8	81.2	22.8	92.2	4.9	26.0
Not asked type of gas	*3.8	13.7	8.0	10.8	*	5.4	*2.0	3.8
Households using wood/solid fuel	123.6	337.3	132.5	288.9	24.4	96.4	69.8	128.0
Households using oil	63.5	126.0	43.3	82.6	*4.1	15.8	34.0	54.9
Households using kerosene	63.3	114.9	18.7	29.7	43.7	92.7	19.2	27.8
Households using solar energy	35.2	67.2	7.1	17.9	13.0	43.0	12.7	18.2
Main energy combinations—								
Electricity only	555.8	762.7	99.9	151.4	222.6	453.1	58.3	84.2
Electricity and gas only	267.9	312.3	637.2	732.2	61.6	68.0	166.0	172.5
Electricity and wood only	74.4	213.4	27.8	102.8	14.7	60.0	33.0	70.3
Electricity and oil only	47.2	89.4	20.6	37.8	*2.8	10.6	25.5	38.9
Electricity and solar only	17.5	24.2	*	*2.8	7.3	24.1	*1.7	*2.5
Electricity, gas and wood only	24.9	38.8	82.5	106.5	*4.2	5.4	25.4	26.3
Total	*987.6*	*1,440.8*	*868.3*	*1,133.4*	*313.3*	*621.2*	*309.9*	*394.6*
All other combinations	*131.9*	*303.6*	*71.0*	*166.8*	*68.4*	*189.9*	*42.2*	*80.5*
Total	**1,119.5**	**1,744.5**	**939.3**	**1,300.2**	**381.7**	**811.1**	**352.1**	**475.1**

	W.A.		*Tas.*				*Australia*	
Type of energy used	*Perth*	*Total*	*Hobart*	*Total*	*N.T.*	*A.C.T.*	*State capitals*	*Total*
Households using electricity	347.4	460.5	60.3	144.8	26.7	78.8	3,199.7	5,026.2
Households not using electricity	*	*2.1	*	*	*	*	*	17.9
Households using gas	173.3	250.4	3.3	13.0	4.1	10.3	1,645.4	2,225.2
Reticulated (mains) gas	153.2	159.4	*	1.8	*	5.6	1,525.8	1,754.8
Bottled gas	18.2	83.4	3.3	10.7	4.1	4.7	103.9	428.5
Not asked type of gas	*1.8	7.7	*	*0.5	*	*	15.7	41.8
Households using wood/solid fuel	99.6	162.5	30.6	89.6	*	19.2	480.5	1,122.4
Households using oil	43.3	54.7	12.4	23.0	*	17.4	200.6	374.9
Households using kerosene	47.4	61.0	*1.1	3.8	*	*1.7	193.4	332.3
Households using solar energy	92.3	114.2	*0.8	*1.4	10.6	5.6	161.3	278.1
Main energy combinations—								
Electricity only	54.9	65.5	17.9	31.3	13.5	35.2	1,009.4	1,596.9
Electricity and gas only	78.6	80.3	*	*	*	*3.4	1,211.3	1,368.9
Electricity and wood only	25.2	35.6	25.5	75.0	*	12.7	200.6	569.7
Electricity and oil only	11.0	12.1	8.8	16.2	*	11.7	115.9	216.6
Electricity and solar only	15.8	18.5	*	*	8.7	*1.6	42.8	82.5
Electricity, gas and wood only	24.3	27.0	*	*1.3	*	*	161.4	206.1
Total	*209.8*	*239.0*	*52.3*	*124.0*	*22.3*	*65.3*	*2,741.3*	*4,040.7*
All other combinations	*137.6*	*223.6*	*7.9*	*21.1*	*4.5*	*13.5*	*458.9*	*1,003.4*
Total	**347.4**	**462.6**	**60.3**	**145.1**	**26.7**	**78.8**	**3,200.2**	**5,044.1**

NOTE: Estimates preceded by the symbol (*) have a relative standard error of between 25 and 40 per cent. Estimates replaced by the symbol (*) have a standard error greater than 40 per cent.

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Other organisations which produce statistics in this field include the Department of Primary Industries and Energy, the Joint Coal Board, the Australian Institute of Petroleum, the Electricity Supply Association of Australia and the Bureau of Mineral Resources, Geology and Geophysics. State government departments and instrumentalities also are important sources of energy data, particularly at the regional level, while a number of private corporations and other entities operating within the energy field also publish or make available a significant amount of energy information.

CHAPTER EIGHTEEN

MANUFACTURING AND INTERNAL TRADE

MANUFACTURING

An historical summary of the development of the manufacturing industry in Australia since 1788 is contained at the end of the chapter.

Government authorities

Industries Assistance Commission

The Industries Assistance Commission (IAC) is a statutory authority which came into existence on 1 January 1974 as a result of the passing of the *Industries Assistance Commission Act 1973* by the Commonwealth Parliament. The Commission replaced the Tariff Board which, since 1921, had been responsible for advising the government on assistance for industries mainly in the manufacturing sector of the economy.

The Commission is an advisory authority. The government is required to seek the Commission's advice before it makes changes in the assistance afforded industries, but the government is not obliged to accept the Commission's advice.

In August 1983, the Government initiated a review of the functions and operations of the Commission. Decisions taken on the recommendations of that review, and reflected in the *Industries Assistance Commission Amendment Act 1984*, were designed to improve the Commission's operations and procedures so that it could more effectively assist the government to meet its industry policy objectives.

The Commission's basic functions remain unchanged. These are to hold inquiries, conduct public hearings and to make reports to the government on assistance, and matters associated with assistance, to industries in the rural, mining, manufacturing and services sectors of the economy. Inquiries are initiated by references from the Minister administering the *Industries Assistance Commission Act 1973*. The Commission is also required to report annually to the government on its operations and on the general structure of industry assistance within Australia and its effects on the economy.

The Commission operates under general policy guidelines which are cast in terms of encouraging the growth of efficient and internationally competitive industries, facilitating structural adjustment and recognising the interests of other industries and consumers.

The Commission is required to give wide public notice that it is conducting an inquiry. Typically, the Commission prepares a draft report on the basis of consultation with interested parties, written submissions and the Commission's own investigatory work. Draft reports are published and public hearings are held to give interested parties an opportunity to examine and comment before Commission reports are finally settled. Public hearings are conducted in an informal manner and may be held in Canberra or other cities throughout Australia.

It is the government's intention that, in most cases, final Commission reports will be published prior to a government decision being taken. When released for publication, these Commission reports are sold by Commonwealth Government Bookshops.

If after receiving a report from the Commission, the government decides that assistance afforded a particular industry should be changed, it introduces a proposal to this effect in Parliament. Thus, the final responsibility for altering assistance given to particular industries within Australia rests with Parliament.

Bureau of Industry Economics

The Bureau of Industry Economics has been established by the Australian Government as a centre for research into the manufacturing and commerce sectors. Formally attached to the Department of Industry, Technology and Commerce, it has professional independence in the conduct and reporting of its research.

The major objectives of the Bureau are to:

- carry out research work needed to assist the government in the formation of industrial policy;
- assist the Industries Assistance Commission and other government bodies by making submissions on the results of its research;
- attract a high standard of professional staff and publish its research findings;
- complement the work of other research agencies and co-operate with universities and colleges in developing research programs.

Activities coming within the Bureau's research area include manufacturing, wholesale and retail trade and personal and business services. These currently contribute well over 50 per cent of gross domestic product in Australia and absorb an even larger share of the labour force.

The Bureau is also concerned with developments in mining, rural industry, public and private services and international trade and investment where these impinge on the manufacturing and commerce sectors.

A Council of Advice advises the Minister of Industry, Technology and Commerce about the Bureau's work and ensures that it is relevant to contemporary and long-term issues in manufacturing and commerce. Its members are drawn from a wide range of industries and backgrounds, including the universities and the trade union movement. The Council assists with the work of the Bureau and the effective dissemination of the results of the Bureau's work.

As well as conducting longer-term research, the Bureau provides the Minister for Industry, Technology and Commerce with regular briefings on economic trends. It also undertakes short-term projects of immediate relevance. The techniques of economic analysis used include supply and demand estimation, industry structure-performance relationships, input-output analysis, econometrics, cost-benefit methods and socio-demographic investigations. Technical and social factors affecting industry structure and performance are also taken into account in investigations.

The staff of the Bureau consists of approximately 70 officers with backgrounds in business, government and university teaching and research.

Research projects often require special surveys where existing data sources are inadequate or more detailed information is required for particular industries. In certain projects, the Bureau undertakes joint research with other organisations and consultants are engaged when this will significantly enhance the quality of the research.

Current research projects include:

- investment;
- depreciation case studies;
- economies of scale;
- industrial development policies;
- evaluation of government programs;
- globalisation (growth in international industrial interdependence);
- trade in services;
- regulation case studies;
- technology transfer and diffusion.

Ongoing research areas include:

- small business;
- corporate taxation;
- economic conditions.

The results of the Bureau's research are published in working papers, which generally address technical issues or present preliminary results and information bulletins which contain statistics and other information and research reports which give comprehensive results of the Bureau's major projects.

Standardisation

The Commonwealth Scientific and Industrial Research Organisation—CSIRO

CSIRO is obliged by two Acts of Parliament to be associated with national standards. The functions of CSIRO as laid down by these Acts involve establishing, developing and maintaining standards of measurement of physical quantities and to promote the use of these standards.

CSIRO first undertook this role in 1938 after government acceptance of a recommendation by a Secondary Industries Testing and Research Committee that these functions were essential for the successful development of manufacturing industry in Australia. Since that time, standards and calibrations have been established for a very wide range of physical quantities, extending considerably beyond the minimum required by law. From 1978, CSIRO has been responsible for first level calibrations in the defence area.

In certain specialist areas, CSIRO has authorised other bodies to carry out functions related to standards. CSIRO has authorised the Australian Nuclear Science and Technology Organisation (Department of Primary Industries and Energy) and the Australian Radiation Laboratory (Department of Community Services and Health) to maintain standards for quantities relating to ionising radiations, such as radioactivity, exposure, and absorbed dose. It has also authorised the Division of National Mapping (Department of Administrative Services) to maintain working standards and co-ordinated universal time and the Australian Telecommunications Commission (Department of Transport and Communications) to maintain working standards of frequency.

At the international level, a treaty now widely known as the Metric Treaty has been signed by 45 member nations, including Australia. The International Bureau of Weights and Measures (BIPM) co-ordinates activities under the Treaty by providing a mechanism for making international agreements in scientific metrology and for co-ordinating research on basic scientific problems in measurement. CSIRO has representatives on five of the BIPM's consultative committees, while the Australian Radiation Laboratory and the Australian Nuclear Science and Technology Organisation (as CSIRO agents) are represented on another consultative committee. Statements recognising the equivalence of many of the Australian primary standards with those of the United States, the United Kingdom and Canada have been exchanged.

The Standards Association of Australia

The Standards Association of Australia is the organisation responsible for the preparation, on a national basis, of Australian standards for materials and products and standard codes of practice.

Formed as the Australian Commonwealth Engineering Standards Association in 1922, it was reconstituted as the Standards Association of Australia in 1929, and was incorporated by Royal Charter in 1950. It is an independent body, having the full recognition and support of the Commonwealth and State Governments and of industry. Approximately one-third of its funds are provided by Commonwealth Government grant, the remainder coming primarily from membership subscriptions and from the sale of publications. Organisations, companies, and individuals are eligible for subscribing membership.

The Association is controlled by a council comprising representatives from Commonwealth and State Governments and their departments, from associations of manufacturing and commercial interests, and from professional institutions. Standards are prepared by committees composed of expert representatives from the interests associated with the subject under consideration. This assistance is on a voluntary basis.

Preparation of a standard is undertaken in response to a request from any responsible source, subject to verification that the standard will meet a genuine need. Standards may relate to one or more of several aspects of industrial practice such as terminology, test methods, dimensions, specifications of performance and quality of products, and safety or design codes. In general, standards derive authority from voluntary adoption based on their intrinsic merit, but in many cases where safety of life or property or consumer protection is involved, they may have compulsory application through statutory reference.

The Association is the owner of a registered certification trademark covering conformity of products to standards. Manufacturers of products covered by Australian standards may obtain a licence to use the StandardsMark, under conditions established by the Association. It also operates a Supplier Assessment Scheme which attests to the adequacy of manufacturers' quality systems to national and international standards.

The Association has international affiliations and is a member, representing Australia, of the International Organization for Standardization (ISO) and of the International Electrotechnical Commission (IEC). Close links are maintained with overseas standards organisations, and the Association acts as Australian agent for the procurement of ISO and IEC publications and the standards of other countries.

The Association has two specialised information centres, one in Sydney and one in Melbourne, containing the national standards of all countries with standards organisations. These centres provide a necessary information service to those concerned with standards development and for researchers from all sectors of the community.

The headquarters of the Association is in Sydney, and there is a major office in Melbourne. Offices are also located in other capital cities and Newcastle.

The National Standards Commission

The Commission was established in 1948 and is presently located at North Ryde, Sydney. The Commission operates under the National Measurement Act and its principal objectives are to promote and co-ordinate the use in Australia of a uniform system of units and standards of measurement of physical quantities and to bring about the progressive introduction of the metric system as the sole system of measurement of these quantities. The Commission also examines and approves the patterns of measuring instruments used for trade, in order to control design and quality.

The Commission has close contact with all State and Territorial Weights and Measures Authorities and provides assistance in the accreditation and training of weights and measures inspectors. The Commission is currently chairing a working party developing Uniform Trade Measurement Legislation for Australia.

Close liaison is also maintained with the manufacturing industry, retailers, consumers and other users to ensure a balance between design, quality, cost and consumer protection.

The Commission has regular contacts overseas, provides the Australian member accredited to the International Organisation of Legal Metrology and provides training courses for countries in the Asia-Pacific region. The Commission is directed by a board of seven part-time Commissioners.

The National Association of Testing Authorities—NATA

NATA organises testing facilities throughout Australia to serve private and governmental needs. Membership is open to authorities whose testing laboratories conform to the standards of staffing and operations defined by the Association. Testing authorities may register their laboratories voluntarily. The Association assesses the competence of the laboratories and ensures that their standards of competence are maintained. Certificates of test issued by registered laboratories may be endorsed in the name of the Association. NATA-endorsed test certificates are generally accepted by governmental, industrial and commercial interests.

Laboratories are registered for performance of specific tests in the fields of acoustic and vibration measurement, biological testing, chemical testing, electrical testing, heat and temperature measurement, mechanical testing, medical testing, metrology, non-destructive testing and optics and radiometry.

The Industrial Design Council of Australia—IDCA

IDCA is a non profit-making design information body, offering assistance to manufacturers developing and launching new products in Australia.

The Council is representative of industry and commerce, together with designers and educationalists. In 1987-88 about 9 per cent of its funds will come from State government grants and the balance will be from fees for services to industry (75%) and Federal Government contracts (6%).

The Council's services include the Product Assessment Scheme (PASS scheme), technical and market feasability evaluation of new products, design counselling, product development management and training programs for manufacturing management (Star Product Programs). The Council also administers the Australian Design Awards program for high quality products of Australian design and manufacture.

The Council has a membership scheme for information exchange and specialist referral services that include senior level manufacturers' designers, marketing and advertising executives, material suppliers and design students.

The Council's programs and activities are designed to promote easy access to, and collaboration between, Australia's service and manufacturing communities to help achieve international competitiveness through improvement of price and non-price factors in locally developed products. The Council has a professional staff comprising engineers, ergonomists and marketing consultants located in offices in Perth, Adelaide, Sydney and Brisbane. Its national office is located in Melbourne.

The Australian Standard Commodity Classification—ASCC

ASCC has been developed by the ABS to enable users to compare statistics of commodities produced in Australia with statistics of commodities imported and exported.

The ASCC manual (1207.0 and 1208.0) links production, import and export items at their most detailed level of comparability in the form of standard (ASCC) commodity items. In a large number of cases, however, due to the differences between production, import and export items, comparability is only achieved at fairly broad aggregate levels. In ASCC, commodities are grouped under industries (as defined in the Australian Standard Industrial Classification) in which they are typically produced.

The latest edition published is in respect of the year 1984-85. The classification will continue to be developed over the coming years to improve the alignment between production, imports and exports.

The Australian Standard Industrial Classification—ASIC

ASIC (1201.0 and 1202.0) was developed by the ABS as part of its program for the integration of economic statistics. Since its introduction in the processing of the 1969 Integrated Economic Censuses, ASIC has gained a wide acceptance by users of statistics outside the ABS and has been progressively applied in most ABS collections and compilations where data are classified by industry.

ASIC has been devised for the purpose of classifying statistical units by industry. It has been designed primarily as a system for the classification of establishments (e.g. individual mines, factories, shops, etc.) although it may also be used for classifying other economic units such as enterprises.

The fundamental concept of this classification system is that an industry (i.e. an individual class, group, etc.) in ASIC is composed of establishments that have been classified to it. Each industry class is defined in terms of the predominant activities of the establishment classified to it and these activities are specified in ASIC as *primary activities* of the individual industry classes. These industry definitions are revised only at relatively infrequent intervals so as to minimise the disruption to time series data assembled on an ASIC basis.

To date, ASIC has been revised twice. ASIC editions published hitherto are: 1969 (original), 1978 (first revision) and 1983 (second revision)—the latter (the 1983 edition) is the one currently in use.

Manufacturing industry statistics

Manufacturing industry statistics from 1901 to 1967–68

A series of substantially uniform statistics exist from 1901 up until 1967–68 when the framework within which manufacturing statistics were collected was changed. Detailed manufacturing statistics in respect of this period are included in *Year Book* No. 57, pages 721–9, and in earlier issues.

Manufacturing industry statistics from 1968–69

As from the year ended June 1969, the Censuses of Manufacturing, Electricity and Gas have been conducted within the framework of the Integrated Economic Censuses which include the Censuses of Mining, Retail Trade, Wholesale Trade, Construction and Electricity and Gas industries. As a result, manufacturing industry statistics for 1968–69 and subsequent years are not directly comparable with previous years.

The standardisation of census units in the integration of economic censuses means that the basic census unit (the establishment), in general, covers all the operations carried on under the one ownership at a single physical location. The manufacturing establishment is thus one predominantly engaged in manufacturing, but the data supplied for it cover (with a few exceptions) all activities at the location. The establishment statistics also include data relating to separately located administrative offices and ancillary units serving the establishment and forming part of the business (enterprise) which owns and operates the establishment.

Census units are classified to industry as described in the ABS publication *Australian Standard Industrial Classification* (1201.0 and 1202.0). ASIC defines the industries in the economy for statistical purposes, thus permitting the scope of the different economic censuses to be specified without gaps or overlapping between them. It also sets out standard rules for identifying the statistical units (e.g. establishments) and for coding them to the industries of the classification. This classification is broadly convertible to the International Standard Industrial Classification adopted by the United Nations Statistical Commission. The adoption of ASIC has resulted in changes in scope between the integrated economic censuses introduced in 1968–69 and the individual economic censuses conducted in previous years.

In the 1967–68 Census there were approximately 62,600 manufacturing establishments (excluding electricity and gas establishments) with employment of 1,276,000. Of these, approximately 35,400, with employment of 1,097,000 would have been included in the 1967–68 Census if ASIC had been used.

MANUFACTURING ESTABLISHMENTS: SUMMARY OF OPERATIONS, AUSTRALIA

Census year	Establishments at 30 June	*Average employment over whole year (a)*			*Wages and salaries (b)*	*Turnover*	*Stocks*		*Purchases, transfers in and selected expenses*	*Value added*	*Fixed capital expenditure less disposals*
		Males	*Females*	*Persons*			*Opening*	*Closing*			
	No.	No.	No.	No.	$m	$m	$m	$m	$m	$m	$m
1968–69 . . .	35,939	927,211	334,066	1,261,277	3,908.1	18,646.5	3,102.5	3,319.6	11,514.9	7,348.8	903.0
1969–70 . . .	35,674	950,055	345,578	1,295,633	4,328.7	20,687.6	3,322.8	3,634.7	12,862.3	8,137.1	1,030.7
1970–71 . . .	No manufacturing census was conducted in respect of this year.										
1971–72 . . .	36,206	953,967	347,672	1,301,639	5,250.0	23,620.4	3,920.1	4,182.5	14,374.8	9,508.1	1,297.8
1972–73 . . .	36,437	951,610	345,485	1,297,095	5,820.0	26,352.4	4,187.2	4,306.3	15,963.0	10,508.5	1,244.4
1973–74 . . .	37,143	969,338	369,041	1,338,379	7,176.4	31,246.7	4,299.1	5,268.5	19,329.8	12,886.3	1,215.5
1974–75(*c*) . .	36,836	931,367	333,440	1,264,807	8,588.0	35,468.0	5,267.2	6,572.2	21,712.3	15,060.7	1,456.4
1974–75(*d*) . .	26,973	916,896	328,341	1,245,237	8,533.5	35,133.7	5,241.0	6,542.7	21,522.3	14,913.1	1,445.9
1975–76 . . .	27,507	888,523	311,917	1,200,440	9,472.4	39,485.3	6,581.1	7,023.3	23,371.7	16,555.8	1,451.7
1976–77 . . .	26,780	876,111	299,720	1,175,831	10,535.8	44,814.3	6,985.1	7,996.8	27,010.0	18,816.1	1,548.0
1977–78(*e*) . .	25,998	855,448	290,237	1,145,685	11,151.4	48,210.8	7,880.2	8,510.8	29,087.8	19,753.6	1,871.8
1977–78(*f*) . .	26,065	853,966	290,233	1,144,199	11,135.8	48,112.6	7,863.5	8,498.1	28,992.7	19,754.4	1,877.3
1978–79 . . .	26,312	852,982	290,909	1,143,891	11,966.4	55,211.3	8,515.4	9,299.6	33,765.4	22,230.1	2,262.8
1979–80 . . .	27,430	862,368	291,816	1,154,184	13,357.5	65,354.8	9,287.6	11,126.4	41,579.5	25,614.0	2,186.7
1980–81 . . .	27,681	859,217	290,746	1,149,963	14,912.7	73,723.0	11,047.1	12,366.9	46,448.7	28,594.1	2,882.7
1981–82 . . .	28,706	862,542	292,266	1,154,808	17,002.8	81,869.3	12,377.4	13,297.3	51,240.4	31,548.7	4,084.2
1982–83 . . .	27,696	787,309	265,596	1,052,905	17,402.7	82,320.6	13,094.4	13,035.1	51,225.8	31,035.5	3,678.4
1983–84(*g*) . .	27,472	751,417	258,401	1,009,818	17,467.4	88,639.3	12,918.1	13,181.5	54,681.4	34,221.3	2,778.4
1984–85 . . .	27,611	753,665	264,783	1,018,448	18,780.3	98,208.7	13,088.8	14,473.8	61,206.6	38,387.1	3,133.7
1985–86 . . .	No manufacturing census was conducted in respect of this year.										

(*a*) Includes working proprietors. (*b*) Excludes the drawings of working proprietors. (*c*) These data and that of previous years include the data of all manufacturing establishments. (*d*) These data and those of following years exclude single establishment manufacturing enterprises with fewer than four persons employed. (*e*) These data and those of previous years are classified to the 1969 (preliminary) edition of ASIC. (*f*) These data and those up to and including 1982–83 are classified to the 1978 edition of ASIC. (*g*) These data and those of following years are classified to the 1983 edition of ASIC.

The items of data on the census forms were standardised for all census sectors, which has meant changes in the content of the statistics. For example, the value of 'turnover' is now collected instead of the 'value of output' at the factory, and purchases and selected expenses are collected as well as the value of specified materials, fuels, etc., used. However the underlying concept of 'value added' is similar to the former concept 'value of production', even though its method of derivation is different.

Even though the concept of 'value added' is similar to 'value of production', direct comparison of 1968–69 and previous figures is not possible because of the change in census units already mentioned which has resulted in the 'value added' for the whole establishment being reported, not merely the 'value added' for the manufacturing process. Comparison is also affected, of course, by the change in the scope of the Manufacturing Census due to the adoption of ASIC. In addition, 'value added' as calculated for the Manufacturing Census differs from the concept used in the National Accounts where the concept of 'value added' also excludes some administrative expenses and sundry charges and the change in stocks component is measured by valuing the physical change in stocks at current prices. It is not practicable in the Manufacturing Census to collect data fully in accord with the National Accounts concept of 'value added'.

For a more detailed description of the Integrated Economic Censuses reference should be made to *Year Book* No. 56, Chapter 31.

Since the introduction of the system of Integrated Economic Censuses the comparability of Manufacturing Census data has been affected by three additional changes to collection practices:

(i) Commencing with the 1975–76 Manufacturing Census, only a limited range of data (i.e. employment and wages and salaries) are collected from single establishment manufacturing enterprises with fewer than four persons employed. This procedure significantly reduces both the statistical reporting obligations of small businesses and the collecting and processing costs of the Australian Bureau of Statistics without affecting the reliability of information for the evaluation of trends in the manufacturing sector of the economy (as these small enterprises contribute only marginally to statistical aggregates). In order to provide a link with past and future years, 1974–75 data were processed on both bases.

(ii) Commencing with the 1977–78 Census the classification of census units to industry is based on the 1978 edition of ASIC which replaces the 1969 preliminary edition in use since the 1968–69 Census. In general the impact of the change in industrial classification is minimal at ASIC Division and Subdivision levels.

(iii) From 1983–84, the classification of census units to industry is based on the 1983 edition of ASIC. The only changes to manufacturing resulting from use of the revised version of ASIC relate to establishments mainly engaged in minor repairs to aircraft or railway or tramway rolling stock. Previously, these establishments were excluded from manufacturing but are now included in industry subdivision 32—Transport Equipment.

Multi-establishment enterprises and single establishment manufacturing enterprises with four or more persons employed

Main structural aggregates relating to number of establishments, employment, wages and salaries, turnover, purchases, transfers in and selected expenses, stocks, and value added are shown in the following tables. Further detailed statistics are contained in the following ABS statistical publications: *Manufacturing Establishments, Details of Operations by Industry Class, Australia* (8203.0), *Manufacturing Establishments, Summary of Operations by Industry Class, Australia* (8202.0) and *Manufacturing Establishments: Selected Items of Data Classified by Industry and Employment Size, Australia* (8204.0).

Employment

The statistics on the number of persons employed shown in the following table relate to the average whole year employment, including working proprietors and those persons working at separately located administrative offices and ancillary units in the State.

It should be noted that persons employed in each State (and their wages and salaries) relate to those employed at establishments, administrative offices or ancillary units located in that State, even though the administrative offices or ancillary units may have served establishments located in another State.

MANUFACTURING ESTABLISHMENTS—MALES, FEMALES AND PERSONS EMPLOYED BY INDUSTRY SUB-DIVISION, 1984–85 AND TOTAL MANUFACTURING, 1982–83 TO 1984–85

Industry sub-division										
ASIC code	*Desctiption*	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
	MALES EMPLOYED									
21	Food, beverages and tobacco	35,796	34,629	24,217	10,534	8,189	3,763	334	347	117,809
23	Textiles	5,495	10,989	530	1,519	560	n.p.	n.p.	—	19,920
24	Clothing and footwear	4,617	10,888	803	1,181	251	111	n.p.	n.p.	17,863
25	Wood, wood products and furniture	19,517	16,102	9,325	6,453	6,668	3,037	108	459	61,669
26	Paper, paper products, printing and publishing	24,258	24,348	7,270	5,202	4,622	4,591	182	960	71,433
27	Chemical, petroleum and coal products	17,651	15,159	2,644	2,051	2,673	n.p.	—	n.p.	40,973
28	Non-metallic mineral products	11,623	8,955	5,645	2,971	4,095	784	322	177	34,572
29	Basic metal products	36,790	11,435	6,155	6,811	5,667	3,262	n.p.	n.p.	70,800
31	Fabricated metal products	28,990	24,280	9,992	5,705	5,796	1,310	333	368	76,774
32	Transport equipment	29,591	45,398	10,372	14,674	4,555	499	57	37	105,183
33	Other machinery and equipment	40,264	32,246	7,124	9,518	6,117	635	32	159	96,095
34	Miscellaneous manufacturing	14,329	16,084	3,516	4,292	1,962	305	65	21	40,574
	Total manufacturing									
	1984–85	**268,921**	**250,513**	**87,593**	**70,911**	**51,155**	**19,902**	**2,103**	**2,567**	**753,665**
	1983–84	269,165	249,139	88,760	70,382	49,719	19,858	1,921	2,473	751,417
	1982–83	285,945	257,870	92,389	74,843	52,265	19,597	1,932	2,468	787,309
	FEMALES EMPLOYED									
21	Food, beverages and tobacco	15,971	15,022	7,350	4,750	3,801	1,989	120	142	49,145
23	Textiles	3,959	6,889	403	1,206	427	n.p.	n.p.	—	13,601
24	Clothing and footwear	16,847	31,928	3,221	3,105	1,201	259	n.p.	n.p.	56,637
25	Wood, wood products and furniture	3,758	3,132	1,545	1,066	1,195	239	19	68	11,022
26	Paper, paper products, printing and publishing	11,752	9,878	3,142	2,109	2,469	732	114	466	30,662
27	Chemical, petroleum and coal products	8,224	4,538	476	448	356	n.p.	—	n.p.	14,117
28	Non-metallic mineral products	1,480	1,283	499	283	367	52	34	12	4,010
29	Basic metal products	2,900	1,353	519	459	414	102	n.p.	n.p.	5,868
31	Fabricated metal products	6,574	5,476	1,929	1,237	935	177	57	63	16,448
32	Transport equipment	2,837	9,151	622	1,488	247	106	8	6	14,465
33	Other machinery and equipment	14,492	10,588	1,372	3,020	1,029	85	26	39	30,651
34	Miscellaneous manufacturing	7,090	6,936	1,269	2,123	646	69	11	13	18,157
	Total manufacturing									
	1984–85	**95,884**	**106,174**	**22,347**	**21,294**	**13,087**	**4,592**	**542**	**863**	**264,783**
	1983–84	94,135	104,109	21,678	20,276	12,278	4,640	511	774	258,401
	1982–83	98,663	105,148	22,257	21,063	12,715	4,488	502	760	265,596
	PERSONS EMPLOYED									
21	Food, beverages and tobacco	51,767	49,651	31,567	15,284	11,990	5,752	454	489	166,954
23	Textiles	9,454	17,878	933	2,725	987	n.p.	n.p.	—	33,521
24	Clothing and footwear	21,464	42,816	4,024	4,286	1,452	370	n.p.	n.p.	74,500
25	Wood, wood products and furniture	23,275	19,234	10,870	7,519	7,863	3,276	127	527	72,691
26	Paper, paper products, printing and publishing	36,010	34,226	10,412	7,311	7,091	5,323	296	1,426	102,095
27	Chemical, petroleum and coal products	25,875	19,697	3,120	2,499	3,029	n.p.	—	n.p.	55,090
28	Non-metallic mineral products	13,103	10,238	6,144	3,254	4,462	836	356	189	38,582
29	Basic metal products	39,690	12,788	6,674	7,270	6,081	3,364	n.p.	n.p.	76,668
31	Fabricated metal products	35,564	29,756	11,921	6,942	6,731	1,487	390	431	93,222
32	Transport equipment	32,428	54,549	10,994	16,162	4,802	605	65	43	119,648
33	Other machinery and equipment	54,756	42,834	8,496	12,538	7,146	720	58	198	126,746
34	Miscellaneous manufacturing	21,419	23,020	4,785	6,415	2,608	374	76	34	58,731
	Total manufacturing									
	1984–85	**364,805**	**356,687**	**109,940**	**92,205**	**64,242**	**24,494**	**2,645**	**3,430**	**1,018,448**
	1983–84	363,300	353,248	110,438	90,658	61,997	24,498	2,432	3,247	1,009,818
	1982–83	384,608	363,018	114,646	95,906	64,980	24,085	2,434	3,228	1,052,905

Wages and salaries

The following table shows wages and salaries of all employees of manufacturing establishments including those working at separately located administrative offices and ancillary units in the State. Drawings of working proprietors are not included.

MANUFACTURING ESTABLISHMENTS—WAGES AND SALARIES BY INDUSTRY SUB-DIVISION, 1984–85 AND TOTAL MANUFACTURING, 1982–83 TO 1984–85
($ million)

Industry sub-division *ASIC code*	*Description*	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
21	Food, beverages and tobacco	1,000	898	565	248	195	86	12	8	3,012
23	Textiles	177	314	14	41	15	n.p.	n.p.	—	586
24	Clothing and footwear	280	598	46	58	18	5	n.p.	n.p.	1,006
25	Wood, wood products and furniture	366	293	153	117	107	55	2	9	1,102
26	Paper, paper products, printing and publishing	723	668	188	125	121	110	6	29	1,969
27	Chemical, petroleum and coal products	603	451	77	55	63	n.p.	—	n.p.	1,269
28	Non-metallic mineral products	275	227	121	66	86	17	8	4	802
29	Basic metal products	909	299	157	160	163	n.p.	n.p.	n.p.	1,782
31	Fabricated metal products	628	527	194	106	112	23	n.p.	n.p.	1,604
32	Transport equipment	640	1,070	202	310	92	10	1	1	2,326
33	Other machinery and equipment	1,014	787	144	215	126	12	1	4	2,304
34	Miscellaneous manufacturing	375	419	74	104	41	6	1	—	1,021
	Total manufacturing									
	1984–85	**6,988**	**6,551**	**1,934**	**1,604**	**1,138**	**443**	**58**	**64**	**18,780**
	1983–84	6,556	6,059	1,813	1,472	1,047	413	49	59	17,467
	1982–83	6,638	5,950	1,786	1,502	1,038	388	45	55	17,403

Turnover

The following table shows the value of turnover of manufacturing establishments. The figures include sales of goods whether produced by the establishment or not, transfers out of goods to other establishments of the same enterprise; bounties and subsidies on production; plus all other operating revenue from outside the enterprise (such as commission, repair and service revenue and rent, leasing and hiring revenue), plus capital work done for own use, or for rental or lease. Receipts from interest, royalties, dividends, and the sale of fixed tangible assets are excluded.

MANUFACTURING ESTABLISHMENTS—TURNOVER, BY INDUSTRY SUB-DIVISION, 1984–85 AND TOTAL MANUFACTURING, 1982–83 TO 1984–85
($ million)

Industry sub-division *ASIC code*	*Description*	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
21	Food, beverages and tobacco	6,228	6,673	4,124	1,695	1,494	685	58	51	21,008
23	Textiles	841	1,370	110	199	75	n.p.	n.p.	—	2,689
24	Clothing and footwear	1,113	2,057	126	184	50	18	n.p.	n.p.	3,551
25	Wood, wood products and furniture	1,667	1,292	625	527	479	328	10	40	4,969
26	Paper, paper products, printing and publishing	3,074	2,833	769	522	403	435	19	89	8,145
27	Chemical, petroleum and coal products	4,027	2,876	1,932	346	517	n.p.	—	n.p.	9,811
28	Non-metallic mineral products	1,545	1,188	846	407	459	105	62	45	4,656
29	Basic metal products	5,172	2,397	1,565	809	1,837	n.p.	n.p.	n.p.	12,439
31	Fabricated metal products	2,625	2,186	936	494	532	94	n.p.	n.p.	6,948
32	Transport equipment	2,024	5,159	907	1,395	252	45	6	3	9,790
33	Other machinery and equipment	4,001	3,326	585	817	486	36	4	13	9,268
34	Miscellaneous manufacturing	1,770	2,079	396	451	206	30	4	1	4,935
	Total manufacturing									
	1984–85	**34,087**	**33,436**	**12,921**	**7,847**	**6,789**	**2,423**	**407**	**299**	**98,209**
	1983–84	30,950	30,081	11,707	7,137	5,923	2,221	359	263	88,639
	1982–83	29,024	27,747	10,716	6,708	5,597	1,969	344	218	82,321

Purchases, transfers in and selected expenses

The following table gives details of the value of purchases, transfers in and selected expenses. Figures include purchases of materials, fuels, power, containers, etc. and goods for resale, plus transfers in of goods from other establishments of the enterprise, plus charges for commission and sub-contract work, repair and maintenance expenses, outward freight and cartage, motor vehicle running expenses, sales commission payments and rent, leasing and hiring expenses.

MANUFACTURING ESTABLISHMENTS—PURCHASES, TRANSFERS IN AND SELECTED EXPENSES, BY INDUSTRY SUB-DIVISION, 1984–85 AND TOTAL MANUFACTURING 1982–83 TO 1984–85
($ million)

Industry sub-division										
ASIC code	*Description*	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
21	Food, beverages and tobacco	4,101	4,495	2,933	1,215	1,047	475	37	36	14,336
23	Textiles	529	863	88	146	45	n.p.	n.p.	—	1,729
24	Clothing and footwear	658	1,115	57	91	22	11	n.p.	n.p.	1,954
25	Wood, wood products and furniture	964	744	340	306	266	198	6	23	2,847
26	Paper, paper products, printing and publishing	1,621	1,531	370	251	195	230	6	47	4,249
27	Chemical, petroleum and coal products	2,474	1,711	1,557	221	371	n.p.	—	n.p.	6,402
28	Non-metallic mineral products	950	629	507	226	267	62	41	34	2,717
29	Basic metal products	3,424	1,885	1,056	536	1,265	n.p.	n.p.	n.p.	8,661
31	Fabricated metal products	1,540	1,234	590	288	333	58	n.p.	n.p.	4,094
32	Transport equipment	1,030	3,468	571	919	129	20	3	2	6,142
33	Other machinery and equipment	2,180	1,856	324	427	278	17	2	7	5,092
34	Miscellaneous manufacturing	1,085	1,252	232	267	127	18	2	—	2,982
	Total manufacturing									
	1984–85	**20,556**	**20,782**	**8,623**	**4,894**	**4,343**	**1,549**	**279**	**182**	**61,207**
	1983–84	18,336	18,405	8,002	4,292	3,828	1,389	249	181	54,681
	1982–83	17,520	17,060	7,393	4,041	3,574	1,260	251	126	51,226

Stocks

Statistics on the value of opening and closing stocks at 30 June are shown in the following table. Figures include all the stocks of materials, fuels, etc., and finished goods and work-in-progress of the establishment whether located at the establishment or elsewhere.

MANUFACTURING ESTABLISHMENTS—OPENING AND CLOSING STOCKS BY INDUSTRY SUB-DIVISION, 1984–85 AND TOTAL MANUFACTURING 1982–83 TO 1984–85
($ million)

Industry sub-division										
ASIC code	*Description*	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
	OPENING STOCKS AT 30 JUNE									
21	Food, beverages and tobacco	665	744	252	304	117	75	6	1	2,163
23	Textiles	133	211	10	30	8	n.p.	n.p.	—	407
24	Clothing and footwear	144	316	13	34	5	1	n.p.	n.p.	512
25	Wood, wood products and furniture	203	151	72	57	61	43	1	5	591
26	Paper, paper products, printing and publishing	256	291	58	47	34	40	1	5	733
27	Chemical, petroleum and coal products	639	452	216	49	59	n.p.	—	n.p.	1,438
28	Non-metallic mineral products	195	121	98	38	60	11	4	2	529
29	Basic metal products	899	273	297	165	240	n.p.	n.p.	n.p.	2,018
31	Fabricated metal products	356	316	110	56	58	12	n.p.	n.p.	979
32	Transport equipment	269	660	147	152	36	13	1	—	1,277
33	Other machinery and equipment	802	682	99	138	82	5	—	2	1,809
34	Miscellaneous manufacturing	242	269	41	58	21	3	—	—	634
	Total manufacturing									
	1984–85	**4,802**	**4,486**	**1,411**	**1,127**	**781**	**321**	**77**	**83**	**13,089**
	1983–84	4,735	4,444	1,401	1,130	747	324	77	62	12,918
	1982–83	4,978	4,480	1,297	1,129	738	342	83	48	13,094
	CLOSING STOCKS AT 30 JUNE									
21	Food, beverages and tobacco	712	768	288	353	123	77	4	1	2,326
23	Textiles	149	242	15	41	9	n.p.	n.p.	—	473
24	Clothing and footwear	166	345	17	39	6	1	n.p.	n.p.	574
25	Wood, wood products and furniture	219	174	77	61	72	52	1	5	659
26	Paper, paper products, printing and publishing	316	343	72	55	40	49	1	6	882
27	Chemical, petroleum and coal products	716	471	212	63	82	n.p.	—	n.p.	1,571
28	Non-metallic mineral products	204	125	105	40	66	14	4	2	561
29	Basic metal products	1,007	311	315	178	247	n.p.	n.p.	n.p.	2,236
31	Fabricated metal products	390	336	115	64	53	14	n.p.	n.p.	1,037
32	Transport equipment	298	780	143	166	40	12	1	—	1,438
33	Other machinery and equipment	881	788	93	144	85	6	—	2	1,999
34	Miscellaneous manufacturing	272	301	49	66	25	4	—	—	718
	Total manufacturing									
	1984–85	**5,330**	**4,986**	**1,499**	**1,269**	**849**	**385**	**78**	**78**	**14,474**
	1983–84	4,835	4,546	1,397	1,127	788	330	77	82	13,182
	1982–83	4,784	4,442	1,420	1,171	756	329	81	52	13,035

Value added

The statistics on 'value added' contained in the following table have been calculated by adding to the value of turnover the increase (or deducting the decrease) in the value of stocks, and deducting the value of purchases, transfers in and selected expenses.

MANUFACTURING ESTABLISHMENTS—VALUE ADDED, BY INDUSTRY SUB-DIVISION, 1984–85 AND TOTAL MANUFACTURING, 1982–83 TO 1984–85

($ million)

Industry sub-division *ASIC code*	*Description*	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
21	Food, beverages and tobacco	2,175	2,203	1,227	529	454	212	19	16	6,835
23	Textiles	329	538	27	64	31	n.p.	n.p.	—	1 026
24	Clothing and footwear	477	973	73	98	30	7	n.p.	n.p.	1,659
25	Wood, wood products and furniture	719	572	291	224	224	140	4	17	2,190
26	Paper, paper products, printing and publishing	1,514	1,354	413	279	214	214	13	43	4,045
27	Chemical, petroleum and coal products	1,630	1,184	372	139	169	n.p.	—	n.p.	3,542
28	Non-metallic mineral products	604	563	346	182	198	46	20	12	1,971
29	Basic metal products	1,857	550	527	287	578	n.p.	n.p.	n.p.	3,996
31	Fabricated metal products	1,119	973	351	214	194	38	n.p.	n.p.	2,912
32	Transport equipment	1,022	1,811	331	490	126	24	3	1	3,809
33	Other machinery and equipment	1,900	1,575	256	396	211	20	2	6	4,366
34	Miscellaneous manufacturing	716	859	172	192	83	13	2	—	2,037
	Total manufacturing									
	1984–85	**14,060**	**13,154**	**4,386**	**3,095**	**2,513**	938	129	113	38,387
	1983–84	12,713	11,779	3,701	2,842	2,137	838	110	102	34,221
	1982–83	11,309	10,650	3,445	2,709	2,041	695	91	97	31,036

Number of establishments

The following figures relate to manufacturing establishments as such and do not include the numbers of separately located administrative offices and ancillary units.

MANUFACTURING ESTABLISHMENTS—NUMBER OF ESTABLISHMENTS IN OPERATION AT 30 JUNE 1985 BY INDUSTRY SUB-DIVISION, AND TOTAL MANUFACTURING AT 30 JUNE 1983, 1984, 1985

Industry sub-division *ASIC code*	*Description*	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
21	Food, beverages and tobacco	972	1 003	550	349	369	115	18	11	3,387
23	Textiles	210	304	47	43	38	12	2	—	656
24	Clothing and footwear	790	955	113	81	60	6	2	4	2,011
25	Wood, wood products and furniture	1,365	1,124	601	329	417	138	17	32	4,023
26	Paper, paper products, printing and publishing	1,251	899	278	213	221	53	17	40	2,972
27	Chemical, petroleum and coal products	400	278	78	47	69	14	—	1	887
28	Non-metallic mineral products	556	388	346	139	199	47	22	14	1,711
29	Basic metal products	194	175	65	38	40	11	4	2	529
31	Fabricated metal products	1,661	1,074	538	336	395	89	29	15	4,137
32	Transport equipment	421	383	202	125	150	17	5	5	1,308
33	Other machinery and equipment	1,555	1,173	337	317	325	45	11	15	3,778
34	Miscellaneous manufacturing	843	743	237	179	168	28	10	4	2,212
	Total manufacturing									
	30 June 1985	**10,218**	**8,499**	**3,392**	**2,196**	**2,451**	575	137	143	27,611
	30 June 1984	10,278	8,404	3,451	2,110	2,408	558	115	148	27,472
	30 June 1983	10,471	8,392	3,440	2,099	2,499	528	117	150	27,696

MANUFACTURING ESTABLISHMENTS—SUMMARY OF OPERATIONS BY INDUSTRY SUB-DIVISION: AUSTRALIA

ASIC Description	*Establishments operating at 30 June No.*	*Average employment over whole year (a) Persons*	*Wages and salaries (b) $ m*	*Turnover $ m*	*Stocks at 30 June*		*Purchases, transfers in and selected expenses $ m*	*Value added $ m*	*Fixed capital expenditure less disposals $ m*
					Opening $ m	*Closing $ m*			
				1983–84					
Food, beverages and tobacco	3,435	169,582	2,906	19,751	2,052	2,191	13,376	6,515	527
Textiles	631	32,523	538	2,347	373	398	1,467	904	53
Clothing and footwear	1,941	71,509	916	3,256	458	522	1,771	1,549	41
Wood, wood products and furniture	3,974	70,037	1,005	4,417	547	601	2,515	1,957	78
Paper, paper products, printing and publishing	2,911	99,282	1,771	7,089	721	732	3,719	3,381	182
Chemical, petroleum and coal products	910	55,812	1,199	8,908	1,424	1,454	5,832	3,106	266
Non-metallic mineral products	1,713	38,200	741	4,070	566	537	2,310	1,731	154
Basic metal products	533	77,073	1,646	10,855	1,951	2,019	7,565	3,357	775
Fabricated metal products	4,165	94,106	1,543	6,506	930	1,011	3,823	2,763	123
Transport equipment	1,290	116,815	2,108	8,503	1,419	1,252	5,011	3,325	270
Other machinery and equipment	3,771	127,370	2,165	8,540	1,867	1,821	4,650	3,845	171
Miscellaneous manufacturing	2,198	57,509	930	4,397	610	644	2,643	1,789	140
Total manufacturing	**27 472**	**1 009 818**	**17 467**	**88 639**	**12 918**	**13 182**	**54 681**	**34 221**	**2 778**
				1984–85					
Food, beverages and tobacco	3,387	166,954	3,012	21,008	2,163	2,326	14,336	6,835	544
Textiles	656	33,521	586	2,689	407	473	1,729	1,026	106
Clothing and footwear	2,011	74,500	1,005	3,551	512	574	1,954	1,659	59
Wood, wood products and furniture	4,023	72,691	1,102	4,969	591	659	2,847	2,190	116
Paper, paper products, printing and publishing	2,972	102,095	1,969	8,145	733	882	4,249	4,044	311
Chemical, petroleum and coal products	887	55,090	1,269	9,811	1,438	1,570	6,402	3,542	293
Non-metallic mineral products	1,711	38,582	802	4,656	529	561	2,717	1,971	168
Basic metal products	529	76,668	1,782	12,439	2,018	2,236	8,661	3,996	672
Fabricated metal products	4,137	93,222	1,604	6,948	979	1,037	4,094	2,912	152
Transport equipment	1,308	119,648	2,326	9,790	1,277	1,438	6,142	3,809	346
Other machinery and equipment	3,778	126,746	2,304	9,268	1,809	1,999	5,092	4,366	219
Miscellaneous manufacturing	2,212	58,731	1,021	4,935	634	718	2,982	2,037	149
Total manufacturing	**27,611**	**1,018,448**	**18,780**	**98,209**	**13,089**	**14,474**	**61,207**	**38,387**	**3,134**

(*a*) Includes working proprietors. (*b*) Excludes the drawings of working proprietors.

Single establishment manufacturing enterprises with less than four persons employed

SINGLE ESTABLISHMENT MANUFACTURING ENTERPRISES WITH FEWER THAN FOUR PERSONS EMPLOYED: SUMMARY OF OPERATIONS, BY INDUSTRY SUB-DIVISION, AUSTRALIA, 1984–85 AND TOTAL MANUFACTURING, 1982–83 TO 1984–85

Industry sub-division		*Establishments operating at 30 June*	*Employment at 30 June (a)*			*Wages and salaries (b)*
ASIC code	*Description*		*Males*	*Females*	*Persons*	
			—No.—			$m
21	Food, beverages and tobacco	823	1,228	699	1,927	11.2
23	Textiles	262	340	211	551	3.7
24	Clothing and footwear	587	506	743	1,249	7.9
25	Wood, wood products and furniture	3,400	5,463	1,389	6,852	36.8
26	Paper, paper products, printing and publishing	1,405	1,869	1,120	2,989	22.7
27	Chemical, petroleum and coal products	237	343	153	496	4.4
28	Non-metallic mineral products	543	833	290	1,123	6.9
29	Basic metal products	140	251	52	303	2.4
31	Fabricated metal products	2,427	3,928	1,077	5,005	35.8
32	Transport equipment	782	1,304	309	1,613	10.5
33	Other machinery and equipment	1,894	2,836	1,061	3,897	32.3
34	Miscellaneous manufacturing	1,743	2,450	1,044	3,494	20.8
	Total manufacturing					
	1984-85	**14,243**	**21,351**	**8,148**	**29,499**	**195.4**
	1983-84	14,109	21,061	7,695	28,756	159.2
	1982-83	14,587	21,714	7,921	29,635	159.5

(*a*) Includes working proprietors. (*b*) Excludes the drawings of working proprietors.

Principal manufacturing commodities

The factory production of certain commodities is shown in the monthly publications of the ABS, and in the annual publication, *Manufacturing Commodities, Selected Principal Articles Produced, Australia (Preliminary)* (8365.0). A more comprehensive list of articles produced is contained in the annual publication, *Manufacturing Commodities, Principal Articles Produced, Australia* (8303.0).

The table following shows the total recorded production of some selected articles manufactured in Australia. A more complete list is published in the ABS publication 8303.0 mentioned above.

QUANTITIES OF SELECTED ARTICLES PRODUCED IN MANUFACTURING ESTABLISHMENTS: AUSTRALIA

Commodity code	*Article*	*Unit of quantity*	*1982–83*	*1983–84*	*1984–85*
	Acid (in terms of 100%)—				
401.29	Hydrochloric	tonnes	60,959	58,935	57,920
401.37	Nitric	"	190,048	189,922	202,033
401.57	Sulphuric	'000 tonnes	1,734	1,706	1,783
171.01, 02, 03, 07, 08	Aerated and carbonated waters	kL	1,009,029	1,007,900	1,044,634
	Animal feeds—				
	From wheat—				
152.06	Pollard	'000 tonnes	206	232	229
159.11	Poultry pellets and crumbles	"	1,402	1,385	1,499
159.15	Poultry mash	"	176	143	139
159.01	Canned dog and cat food	tonnes	189,975	199,078	n.p.
159.02	Dog biscuits (whole)	"	23,084	17 120	18,921
159.03	Other manufactured dog and cat food	"	101,605	112,500	112,059
647.98	Audio cassettes, pre-recorded	'000	14,904	16,388	18,835
	Bags, leather, fibre, etc.—				
864.31, 33, 39	Handbags, ladies	"	n.p.	679	520
654.31	Bath heaters, electric	No.	2,654	2,631	2,474
	Baths (exclude infants' baths)—				
671.08	Plastic (include fibreglass)	'000	n.p.	26	43
	Batteries, wet cell type—				
685.13	Auto (S.L.I.) 6 volts	"	154	145	137
685.17	Auto (S.L.I.) 12 volts	"	2,398	2,753	2,285
172.02, 04, 06	Beer(*a*)	ML	1,972	1,873	1,861
064.21	Biscuits	tonnes	129,119	132,270	13,220
386.07-23	Blankets, woollen—pure and mixtures	'000	850	732	745
152.02	Bran (wheaten)	'000 tonnes	93	91	94
172.21	Brandy	kL	1,504	2,091	2,411
791.11-15	Brassieres	'000	7,248	8,295	7,690
066.01, 05	Breakfast food, cereal (ready to eat)	tonnes	80,301	86,798	87,915
471.91, 93, 98	Bricks, clay	million	1,694	1,771	1,982
261.41	Briquettes, brown coal	'000 tonnes	760	746	789
052.20	Butter—from cream (exclude whey cream)	tonnes	75,777	105,199	110,535
789.71-83	**Cardigans**, jumpers, etc	'000	21,072	21,845	18,791
474.02	Cement, Portland	'000 tonnes	5,350	5,072	5,680
053.01, 11, 21, 31	Cheese (non-processed)	tonnes	154,066	170,707	159,812
	Cloth (including mixtures)—				
384.89-99	Cotton(*b*)	'000m²	22,776	23,597	25,638
384.31-83	Of man-made fibres	"	125,658	146,762	154,897
385.01-35	Wool (excluding blanketing and rug)	"	10,353	9,888	10,529
435.22	Coke—metallurgical	'000 tonnes	3,338	3,181	3,266
475.90	Concrete, ready mixed	'000m³	11,400	11,865	13,477
	Confectionery—				
104.02-18	Chocolate	tonnes	83,178	86,655	91,921
104.21-29	Other	"	57,489	63,265	61,626
452.04	Copper, refined(*c*)	'000 tonnes	172	166	165

(*a*) Excludes waste beer and beverages with alcohol content of 1.15% or less. (*b*) Excludes tyre-cord fabric and towelling. (*c*) Primary origin only. *Source*—Bureau of Mineral Resources.

QUANTITIES OF SELECTED ARTICLES PRODUCED IN MANUFACTURING ESTABLISHMENTS: AUSTRALIA—*continued*

Commodity code	*Article*	*Unit of quantity*	*1982–83*	*1983–84*	*1984–85*
171.06, 10	Cordials and syrups	kL	140,835	130,795	(*a*)121,890
499.42	**Electricity**	mil. kWh	105,933	111,696	119,189
523.76–78	Electrodes for manual welding	tonnes	20,800	18,785	15,980
	Essences, flavouring—				
139.31	Domestic	kL	763	953	535
139.35	Industrial	"	7,199	13,910	7,062
696.01, 03, 05	**Fans**, electric (propellor type)	No.	606,114	622,127	605,922
	Floorboards—				
332.06	Australian timber	m³	136,740	181,787	239,179
332.08	Imported timber	"	n.p.	n.p.	6,349
	Floor coverings—(*b*)				
	Tufted carpets, floor rugs, mats and matting of or predominantly of—				
386.63	Man-made fibres	'000m²	19,746	22,030	24,050
386.71	Wool or fine animal hair	"	9,799	11,554	12,041
	Flour—				
068.01	Self-raising	tonnes	25,461	20,405	19,662
062.01, 32	Wheaten (*c*)	'000 tonnes	1,098	1,179	1,166
	Fruit juices, natural—				
074.61–69,79	Single strength	kL	201,110	214,055	317 688
074.76,77,89	Concentrated	"	30,309	n.p.	51,632
127.21	**Glucose**	tonnes	44,777	71,254	70,404
832.57	Golf clubs	'000	257,448	214,494	255,210
	Heaters, room—				
651.01, 03	Solid fuel	No.	10,722	8,307	26,600
651.11–20	Electric radiators and fires	'000	572	559	493
651.15	Gas fires and space heaters	No.	60,751	64,929	64,442
	Hosiery—				
789.53, 54, 55, 57, 59	Men's	'000 pairs	25,788	23,541	26,942
789.63, 65	Children's and infants' (excl panty hose)	"	13,200	15,282	17,328
051.56, 58, 59	**Ice cream** (*d*)	kL	208,714	201,634	205,851
051.87, 89, 90	Infants', invalids' and health beverages from cows milk (*e*)	tonnes	28,291	27,184	27,123
	Iron and steel—				
442.04, 08	Iron	'000 tonnes	4,990	5,258	5,341
442.71–73	Steel ingots (including continuous cast billets)	"	5,392	6,093	6,301
442.28	Blooms and slabs (*f*)	"	3,750	3,981	3,989
076.60	**Jams** (including conserves, jellies, etc.)	tonnes	30,700	29,110	30,393
391.04	**Lard**	"	2,109	2,339	2,573
	Lawn mowers—				
699.51	Petrol, rotary	No.	250,941	237,894	280,921
699.41, 45, 55, 61	Other types (*g*)	"	n.p.	7,523	2,821
453.04	Lead refined (*h*)	'000 tonnes	212	190	189
	Leather, dressed or finished—				
301.43–65	Chrome tanned (including retanned)	'000 m²	3,390	3,824	3,868
	Lime—				
275.43, 45	Crushed	tonnes	341,367	419,676	416,478
479.18	Hydrated	'000 tonnes	175	165	144
479.12	Quick	"	500	516	643
802.21	Lipstick	tonnes	37	38	36
063.15	**Malt** (excluding extract)	'000 tonnes	536	481	438

(*a*) Prior to 1984–85 some manufacturers included post-mix concentrates in commodity code 171.10. (*b*) Excludes underfelts and products of coir, sisal or other hard fibres (*c*) Includes wheatmeal for baking, excludes sharps and atta and other flour. (*d*) Includes ice cream combined with other confections, including those aerated milk-based confections which contain 10% or more butterfat. (*e*) Includes malted milk and milk sugar (lactose). (*f*) Primary mills output. (*g*) Petrol cylinder, electric and hand. (*h*) Includes lead content of lead alloys from primary sources but excludes lead-silver bullion.

QUANTITIES OF SELECTED ARTICLES PRODUCED IN MANUFACTURING ESTABLISHMENTS: AUSTRALIA—*continued*

Commodity code	*Article*	*Unit of quantity*	*1982–83*	*1983–84*	*1984–85*
	Margarine—				
121.01	Table	tonnes	104,562	108,236	105,488
121.06, 08	Other	"	47,326	45,362	37,558
844.22, 25, 27	Mattresses, inner spring	'000	664	669	711
027.02–77	Meat, canned(*a*)	tonnes	40,823	40,573	39,260
703.11	Meters (domestic), water consumption	'000	197	207	244
	Milk, condensed, concentrated and evaporated—				
051.28	Skim	tonnes	21,157	23,804	23,599
	Milk powder in powdered form—				
051.71	Full cream	"	58,932	46,662	46,091
051.75, 80	Skim	"	88,276	117,678	136,954
051.83	Buttermilk or mixed skim and buttermilk	"	8,290	10,420	9,360
503.13–32	Motors, electric (excl. automotive)	'000	2,540	2,641	2,456
	Motor vehicles, finished and partly finished—				
581.02–08, 22	Cars	No.	293,805	264,086	298,710
581.10–16, 28	Station wagons	"	69,284	66,006	66,163
582.04, 31, 06, 32	Utilities and panel vans	"	15,392	11,750	13,474
582.07, 19, 47, 48	Trucks and truck-type vehicles	"	16,270	10,747	16,325
465.16	**Nails**, steel	tonnes	16,483	17,467	17,499
	Oatmeal and rolled oats—				
062.62	For porridge, etc.	"	23,173	22,750	27,154
	Paints, etc.—				
	Architectural and decorative(*b*)—				
	Solvent thinned—				
410.01	Primers and undercoats	kL	8,778	8,708	7,059
410.03, 05, 07	Finishing coats	"	22,481	23,060	23,317
	Water thinned—				
410.11, 13, 15	Plastic latex	"	45,994	50,284	55,045
410.17	Other water based	"	4,152	3,570	3,330
	Paper—				
351.11	Newsprint	'000 tonnes	366	365	365
351.18–79	Other	"	634	727	712
352.01	Paperboard(*c*)	"	429	451	502
336.12	Particle board (resin bonded)	'000 m²	572	673	696
479.32, 33	Plaster sheets, non-acoustic	'000 m²	51,229	60,312	69,207
334.32, 34, 36, 38	Plywood, 1 mm basis	"	(*d*)61,877	75,136	76,060
	Preserves—				
	Fruit—				
076.01–50	Canned or bottled	tonnes	161,241	146,602	166,038
074.01	Pulp and puree, single strength	"	1,080	772	933
	Vegetables—				
094.02–48	Canned or bottled	"	129,610	130,080	138,160
092.02, 06, 10, 19	Quick frozen	"	183,658	197,587	202,377
	Pyjamas—				
791.75, 80	Men's and boys', woven (suits only)	'000	3,228	2,657	3,105
	Records (gramophone)(*e*)—				
647.93	Single play	"	7,783	6,618	7,905
647.94	Extended play	"	67	208	
647.95	Long play	"	17,208	15,303	16,528
657.33, 34, 35	Refrigerators, domestic, electric	"	277	265	259
403.22–94	Resins, synthetic and plastics, for moulding, extrusion, lamination, calendering, etc.	'000 tonnes	544	592	656

(*a*) Excludes poultry and baby food. (*b*) Excludes heavy duty coatings. (*c*) Excludes coated container board. (*d*) Excludes case plywood. (*e*) Conventional stereophonic discs.

QUANTITIES OF SELECTED ARTICLES PRODUCED IN MANUFACTURING ESTABLISHMENTS: AUSTRALIA—*continued*

Commodity code	*Article*	*Unit of quantity*	*1982–83*	*1983–84*	*1984–85*
123.18	**Sauce**, tomato (incl. tomato ketchup)	kL	23,347	27,608	26,588
062.04	Semolina	'000 tonnes	39	35	37
791.22, 24, 33, 35	Shirts, woven (men's, and boys') (*a*)	'000	4,548	4,843	7,153
654.41	Sink heaters, electric	No.	7,880	6,900	4,307
805.01–13	Soap, for personal toilet use (*b*)	tonnes	33,617	33,578	29,286
	Soup—				
122.13	Dry powders, granules and cubes	"	5,835	4,009	4,209
127.15	Starch (incl. cornflour)	"	161,459	142,493	170,707
	Stoves, ovens and ranges, domestic cooking—				
661.02–11	Electric (*c*)	No.	160,247	(*d*)196,739	(*d*)217,627
662.26, 31, 34	Gas, upright or elevated (with oven)	"	n.p.	106,264	115,359
102.01	Sugar, raw	'000 tonnes	3,534	3,113	3,545
405.36	Sulphate of ammonia	tonnes	196,520	228,151	231,283
415.07, 405.25	Superphosphate (*e*)	'000 tonnes	2,877	2,668	2,647
792.03–10	Swimwear (*f*)	'000	4,560	4,190	4,975
803.61	**Talcum** powder	tonnes	4,461	5,779	6,258
	Tallow (including dripping), rendered—				
391.15	Edible	"	80,714	59,525	69,267
391.24	Inedible	"	258,179	249,096	245,126
647.25–28	Television sets (colour)	No.	271,908	255,211	298,824
	Tiles, roofing—				
475.30	Concrete	'000	128,739	165,039	186,187
472.12	Terracotta	"	40,704	37,915	41,025
	Timber—				
	From native logs—				
331.01–07	Hardwood, etc.	'000 m³	1,788	1,829	1,933
331.09–19	Softwood	"	1,196	989	1,055
661.22	Toasters, electric (domestic)	No.	526,002	374,646	319,996
094.51	Tomato juice	kL	5,598	8,348	5,935
094.53	Tomato paste and puree	"	15,846	10,206	11,394
386.35–43	Towels (*g*)	'000 m²	7,592	7,964	8,014
671.51–59	Toilet cisterns	No.	n.p.	655,855	(*h*)610,920
683.03–11	Transformers, chokes and ballasts, for distribution of power and light, etc..	"	20,627	12,458	14,269
	Wash basins—				
671.37	Earthenware	'000	212	218	250
693.02, 04	Washing machines, household, electric	"	240	293	278
	Weatherboards—				
332.12	Australian timber	m³	20,422	25,784	27,916
332.14	Imported timber	"	2,733	5,522	6,606
152.14	Wheatmeal for stock feed	'000 tonnes	414	286	265
519.01	Wheelbarrows (metal)	No.	172,256	155,484	141,283
	Wine, beverage—				
172.42	Fortified	kL	39,223	32,296	46,855
172.46	Unfortified	"	258,141	320,498	345,841
341.32–45	Wood pulp (air dried)	'000 tonnes	626	782	(*i*)613
383.09, 11, 12	Wool, scoured or carbonised	tonnes	79,661	86,393	(*j*)99,897
383.27–31	Wool tops, pure	"	22,198	21,238	22,508
	Yarn (including mixtures)—				
383.79–87	Cotton	"	18,884	18,505	20,333
383.89–95	Woollen	"	4,920	4,939	5,613
383.97, 99, 384.01, 03	Worsted	"	13,431	14,663	17,399
383.41–77	Synthetic (all types)	"	24,552	25,585	24,035
457.04	**Zinc**, refined (*k*)	'000 tonnes	288	300	299

(*a*) Business or formal. (*b*) Excludes powdered shampoo. (*c*) Includes wall ovens but excludes cooking tops and portable units. (*d*) Excludes grill boilers. (*e*) Includes double and triple superphosphate and ammonium phosphate expressed in terms of single superphosphate i.e. 22% P_2O_5 equivalent. (*f*) Includes swim shorts. Excludes infants' and babies' swimwear. (*g*) Towels or tea towels of cotton or terry fabrics. (*h*) Metal and plastic only. (*i*) Excludes chemical. (*j*) Excludes wool from the fellmongered, dead or waste wool. (*k*) Primary origin only includes small quantities of zinc dust.

Enterprise statistics—Integrated Economic Censuses and Surveys

The Integrated Economic Censuses and Surveys conducted by the Australian Bureau of Statistics have, since 1977–78, included enterprises primarily engaged in Mining and Manufacturing annually, with Electricity and Gas Production and Distribution collected in 1977–78 and annually from 1979–80, while other economic sectors are approached on a rotating basis. Statistics in respect of enterprises have been published in *Integrated Economic Censuses and Surveys, Enterprise Statistics: Details by Industry Class, Australia* (8103.0).

Below is a brief summary of the Censuses' collection units and methodology and a summary table of enterprise statistics. More detailed explanations on the Censuses are shown in the above publication.

The business units, as standardised for purposes of the Integrated Economic Censuses and Surveys are at three levels: the establishment (and associated administrative offices and ancillary units); the enterprise; and the enterprise group.

The central unit from which statistical information was collected is the *enterprise*, defined broadly as the unit comprising all operations in Australia of a single operating legal entity. The term legal entity is used to cover a sole proprietor, or partnership, or company, but also includes co-operative societies and some government authorities mainly engaged in the industries included in the Censuses and Surveys.

The group of legal entities owned or controlled by a single company is recognised as a separate type of unit—the *enterprise group*. The basic unit for which most data were collected and tabulated is the *establishment*, defined in general as a unit comprising all the operations carried on by the one enterprise at a single physical location—such as an individual factory, shop or mine.

In the Integrated Economic Censuses and Surveys, information was collected using a common framework of reporting units (enterprises and establishments as defined above) and data concepts and in accordance with a standard industrial classification (the *Australian Standard Industrial Classification,* 1983 Edition). As a result the statistics for the industries covered by the Censuses and Surveys are provided with no overlapping or gaps in scope, so that aggregates for economic data such as value added, employment, wages and salaries, fixed capital expenditure and stocks are obtained on a consistent basis for all industries and business units covered by the Censuses and Surveys. A detailed description of the Integration of Economic Censuses is contained in Chapter 31, *Year Book* No. 56, 1970.

ENTERPRISES—SUMMARY OF OPERATIONS BY INDUSTRY, AUSTRALIA

Industry and year	*Enterprises operating during year (a)*	*Persons employed at 30 June (b)*	*Wages and salaries (c)*	*Turnover (d)*	*Purchases and selected expenses (e)*	*Rent leasing and hiring expenses (f)*	*Stocks (g)*		*Value added (h)*	*Fixed capital expenditure less disposals (i)*
							Opening	*Closing*		
	No.	No.	$m	$m	$m	$m	$m	$m	$m	$m
Mining (excluding services to Mining)—										
1983–84	890	72,743	2,002.5	12,687.7	4,210.1	202.3	1,853.2	1,852.7	8,274.7	2,428.7
1984–85(*j*) . . .	925	76,696	2,235.1	15,891.3	5,237.3	197.8	1,993.5	1,895.4	10,358.1	1,920.7
Manufacturing—										
1983–84	22,807	1,026,041	17,679.9	88,744.3	51,613.7	1,484.1	14,085.2	14,294.1	35,855.3	2,914.0
1984–85(*j*) . . .	23,105	1,045,821	19,215.5	99,525.0	58,621.9	1,630.3	14,386.1	16,052.4	40,938.9	3,236.1
Electricity and Gas—										
1983–84	97	94,981	2,119.0	10,383.4	4,762.4	163.9	766.2	785.8	5,476.9	3,684.2
1984–85(*j*) . . .	97	94,519	2,295.3	11,461.2	5,252.6	266.5	781.6	697.2	5,857.7	3,076.6

(*a*) The number of enterprises in operation for all or any part of the year which were in the scope of the censuses and surveys. (*b*) Working proprietors and employees, including part-time and casual employees as at 30 June. (*c*) Wages and salaries paid during the year to employees of the enterprise. Drawings of working proprietors are excluded. (*d*) Sales of goods, commission revenue, repair and service revenue, rent, leasing and hiring revenue, government bounties and subsidies and all other operating revenue except interest, royalties and dividends. (*e*) Purchases by the enterprise of goods for manufacture or resale, containers, stores and supplies (except office supplies) and charges for fuels, electricity and water, freight and cartage, vehicle running expenses, sales commission expenses, repair and maintenance expenses, and commission and sub-contract expenses. (*f*) Amount paid for rent and leasing premises, vehicles and equipment. (*g*) Stocks of materials, fuels, etc. work in progress and finished goods owned by the enterprise. (*h*) This is derived as turnover plus increase (less decrease) in stocks, less purchases and selected expenses, less rent, leasing and hiring expenses. (*i*) Outlay on new assets (including progress payments) and land and secondhand fixed tangible assets less disposals. (*j*) Preliminary estimates and may be subject to revision.

Foreign ownership and control in the manufacturing industry

Summary information on foreign ownership and control in the manufacturing industry is shown in Chapter 26.

INTERNAL TRADE

Estimates of the value of retail sales of goods (excluding motor vehicles parts, petrol, etc.) by industry, and quarterly estimates by commodity groups, are obtained by means of sample survey for each State and the Australian Capital Territory. Tables showing estimates derived from these surveys are given below.

VALUE OF RETAIL SALES OF GOODS (EXCLUDING MOTOR VEHICLES, PARTS, PETROL, ETC.) AT CURRENT PRICES: INDUSTRIES (*a*)

($ million)

ASIC Code	*Description*	*1983–84*	*1984–85*	*1985–86*
4881	Grocers, confectioners, tobacconists	13,840.5	14,852.7	16,585.7
4882	Butchers	1,517.8	1,550.5	1,814.0
4815	General stores	475.0	470.9	498.4
4883,5,6	Other food stores	2,716.0	2,910.1	3,301.7
4884; 9232; 9241,2,3	Hotels, liquor stores, licensed clubs	5,159.6	5,487.6	6,068.5
4843,4,7	Clothiers	4,050.1	4,363.0	4,964.1
4814	Department stores	4,767.6	5,438.8	5,934.1
4845	Footwear stores	751.7	806.2	883.5
4853,4	Hardware stores	1,174.1	1,188.7	1,367.7
4855,6	Electrical goods stores	2,698.4	2,705.2	2,861.8
4849	Furniture stores	1,113.3	1,215.2	1,460.0
4848	Floor coverings stores	449.0	522.4	572.4
4891	Chemists	1,779.4	1,854.4	2,052.2
4894	Newsagents	1,545.0	1,728.1	1,798.5
4892,3,5,6,7; 9231; 9251,2	Other	1,799.6	1,960.3	2,382.3
	Total (*b*)	**43,836.7**	**47,054.1**	**52,544.1**

(*a*) Excludes ASIC groups 486 (Motor vehicle dealers; petrol and tyre retailers) and 934 (Laundries and dry-cleaners) and ASIC classes 4846 (Shoe repairers), 4857 (Electrical appliance repairers), 9133 (Motion picture threatres), and 9233 (Accommodation) which were included in the census of Retail Establishments and Selected Services Establishments for 1979--80. Excludes Northern Territory. (*b*) A small difference between this figure and that for the total value of retail sales shown in the table below occurs due to some businesses having access to more up-to-date records when supplying the data for commodities.

VALUE OF RETAIL SALES OF GOODS (EXCLUDING MOTOR VEHICLES, PARTS, PETROL, ETC.) AT CURRENT AND CONSTANT PRICES: COMMODITY GROUPS (*a*)

($ million)

	Current prices			*Average 1979–80 Prices*		
Commodity group	*1983–84*	*1984–85*	*1985–86*	*1983–84*	*1984–85*	*1985–86*
Groceries (*b*)	9,851.6	10,554.0	11,912.6	6,857.8	7,004.2	7,336.3
Fresh meat	2,369.9	2,385.9	2,716.1	2,007.2	1,922.0	2,140.2
Other food (*c*)	4,273.5	4,717.3	5,289.8	2,777.7	2,946.1	3,032.1
Beer, wine and spirits	5,499.7	5,883.0	6,435.0	3,832.2	3,804.8	3,860.9
Clothing and drapery	6,019.5	6,416.4	7,107.8	4,665.3	4,706.9	4,790.2
Footwear	1,025.2	1,121.8	1,244.4	764.0	784.0	807.0
Hardware, china and glassware (*d*)	2,011.7	2,144.1	2,339.9	1,409.6	1,437.9	1,455.0
Electrical goods (*e*)	3,296.5	3,452.5	3,659.4	2,987.5	3,214.7	3,289.2
Furniture	1,386.2	1,529.4	1,798.0	945.7	988.6	1,064.1
Floorcoverings	552.4	608.9	673.8	418.2	439.0	430.0
Cosmetics	1,057.9	1,177.4	1,353.3	697.1	720.0	764.9
Medicines etc.	1,061.9	1,107.2	1,201.9	775.6	772.3	789.8
Newspapers, books and stationery	1,796.4	2,037.7	2,233.3	1,113.6	1,182.1	1,168.7
Other goods (*f*)	3,593.8	3,892.4	4,554.0	2,588.0	2,692.1	2,896.8
Total (excluding motor vehicles, etc.)	**43,796.1**	**47,028.0**	**52,519.5**	**31,839.6**	**32,614.7**	**33,825.2**

(*a*) Excludes Northern Territory. (*b*) Includes confectionery, milk (except home deliveries by vendors) and frozen foods. (*c*) Includes fresh fruit and vegetables, bread (except home deliveries by vendors), cakes and pastries (except frozen), seafoods (fresh and cooked), hamburgers, cooked chicken, sandwiches, pizzas (except frozen), Chinese food, ice cream and soft drink. (*d*) Excludes basic building materials, builders' hardware and supplies such as tools of trade, paint, etc. (*e*) Includes radios, television and accessories, musical instruments, domestic refrigerators, etc. (*f*) Includes tobacco, cigarettes, etc., sporting goods, etc., but excludes grain and produce and business machines.

DEVELOPMENT OF MANUFACTURING INDUSTRIES IN AUSTRALIA

(*This special article has been contributed by the Bureau of Industry Economics*)

1788–1820: the first years of settlement

In the early years of Australia's settlement, there was little scope for industrial or commercial enterprises. The government, as both main producer and main consumer, established workshops in order to produce the basic necessities of life in a small, isolated community—flour, salt, bread, candles, leather and leather articles, blacksmith's products, tools and domestic items.

With agriculture languishing and commerce in its infancy, private ventures prospered little. The volume of domestic demand was too small to serve as a firm basis for economic development and, generally, was met by imports.

The lack of skilled labour and the small number of free settlers limited severely both the availability of investment funds and business skills generally.

1820–1850: the pastoral age

In the years between 1820 and 1850 the pastoral industry exerted a dynamic influence on economic expansion and by 1850 was supplying well over 50 per cent of the British market for imported wool.

The growth of the wool industry brought great advances in the rest of the economy. Local manufacturing industries were established in response to new market opportunities, though production was geared to the growing agricultural output and, also, was limited to products which were naturally protected from imports.

During the 1840s a severe and protracted depression in the pastoral industry and in the economy as a whole seriously interrupted Australia's economic expansion. Changes in economic conditions in Britain resulted in falls in export prices and reduced capital inflow to Australia. The rate of increase in the production of wool slackened and at the same time the population increase declined.

Despite the depression of the pastoral industry in the 1840s, New South Wales experienced strong industrial growth between 1820 and 1850, arising from a number of factors. These included the rapidly-growing population, which rose from under 13,000 in 1815 to over 180,000 by 1851, greater diversity and level of skills with the influx of free settlers, and the outward spread of settlement. In turn these led to substantial increases in the demand for food and drink, transport equipment, construction materials and other implements.

In other colonies manufacturing developed as circumstances permitted. In Tasmania an emphasis on processing primary produce, a limited local market, a shortage and higher cost of skilled labour and the more immediate rewards from sheep farming and commerce combined to slow the pace of industrial development. Flour milling, ship building and metal working activities were established nevertheless.

Despite its smaller population, industry developed further in South Australia than in Victoria, which was showing few signs of specialisation at this time. Flour milling, metal smelting, brewing and tanning were established in South Australia, and some success was also achieved in the design and manufacture of agricultural equipment. Neither Western Australia nor Queensland experienced any significant industrial activity during this period.

The 1850s: implications of the gold rush for manufacturing

Gold worth $125 million was mined between 1851 and 1861, surpassing wool as the great export earner—a position it maintained until the 1870s. Banking and commerce expanded rapidly as gold became the nation's currency; financing improved shipping facilities, railways, telegraphs and other amenities. The demand for goods and the clamour for swift passage for eager migrants brought new prosperity to British and American shipyards and revived allied and local trades. For their role in stimulating confidence and activity in a depressed era, the gold fields have been described as 'huge public works'.

1860–1900: economic growth leading to structural imbalance and the depression of the 1890s

In the years between 1860 and 1900 Australian economic growth was rapid and generally well-sustained.

In Victoria, where the gold rush had led to an annual population growth of 19 per cent between 1851 and 1860, there was a rapid increase in factory activity. The building industry was thriving and an increasing demand for gold-mining equipment boosted Victoria's metal working trade. Government incentives encouraged new activities, speculative finance became more available and there was an increase in public works; all were instrumental in fostering industrial growth in the colony.

A protective tariff system against overseas imports was first introduced in Victoria in 1867 in order to encourage the manufacturing industry, as surplus labour became available after the gold rush. In 1871 and again in 1877 there were substantial increases in the tariff, the revenue raised being used primarily to finance public works expenditure.

In New South Wales industry grew at a steady pace and by 1877–78 factory workforce structures in New South Wales and Victoria were similar. Clothing and footwear, metals, engineering and transport, and the food, drink and tobacco industries were major employers in both colonies.

Tasmania and South Australia both experienced long-run declines in manufacturing between 1860 and 1890, but in Queensland and Western Australia the opposite was the case.

Overall, manufacturing demonstrated long-run growth during this period with factory employment increasing from 11,000 in 1851 to 149,000 in 1891 and output increasing from 4.9 per cent of total Gross National Product (GNP) in 1861 to 10.9 per cent in 1890. It was then in fourth place behind services, pastoral activities and construction.

Public companies were establishing multiple branches, industrial activity was spreading to non-metropolitan areas and overseas investors were sharing an interest in activities such as timber milling and meat processing. As well, governments were increasing their own efforts, organising and subsidising the processing industry in recognition of the importance of trade.

Increasing activity in public works, especially government railway construction, played an important role in encouraging expansion in manufacturing during the 1870s. In the second half of the 1880s, capital inflow increased dramatically with overseas loans from Britain underpinning the construction of the railways. In 1890 the Baring crisis prompted Britain to reassess her overseas investments, and in November of that year there was an abrupt halt to the growth in capital inflow which in turn brought railway construction to an unexpected halt.

The process of economic change between 1860 and 1890 left industry's share of total investment unchanged. Manufacturing enterprises remained essentially small-scale, labour intensive and utilising only the simplest technology. Investment in railway building, the pastoral industry, and construction, all of which were funded primarily from overseas sources, ceased with the onset of the depression of the 1890s. The affluence of the previous decades was at an end.

1901–1930: from Federation to Depression

Though the economy recovered rapidly from the depression of the 1890s, the rate of growth for Gross Domestic Product (GDP) in the first thirty years of Federation was significantly lower than it was during the previous thirty years.

Between 1901 and 1930 there were major changes in the industry environment. By eliminating customs barriers between the States, Federation encouraged trade and assisted the further expansion of industry. Though total manufacturing employment had increased from 190,000 in 1903 to 328,000 by 1913, the sector was still relatively small. In 1911 it contributed only 13 per cent of GDP, behind services (55%) and the rural sector (19.9%) and had a limited heavy industry base. Its growth had been supported by tariffs—the Lyne Tariff of 1908 established protection as part of Federal Policy.

The development of Australian manufacturing industry received some further impetus from increases in customs duties in 1911 and 1914, and then grew more strongly in the environment of World War I.

The opening of the steel works at Newcastle during World War I allowed the growth and diversification of basic metal-working industries. However, the shortage of essential capital equipment limited expansion to a narrow range of industrial products.

The years following World War I saw the manufacturing industry expand in an atmosphere of expansionary fiscal policy, high prices for wool and wheat, and with a population which increased from four to six million between 1910 and 1930.

The growth of the manufacturing industry held a promise of employment for a rapidly growing population. In addition, if Australia was to achieve a high degree of self-sufficiency then the existing industrial base needed to be broadened, and the tariff was seen as an important instrument in the achievement of this aim. In 1921, in an endeavor to assist the development of existing and new industries, protection was increased under the Greene Tariff. In the same year, the Tariff Board was established to advise the government on Tariff matters. Protection policy received further attention with the establishment of the Brigden Committee in 1927—set up to conduct an economic inquiry into the tariff. Both bodies recommended that futher protection be given only after the most careful consideration. Despite the warning implicit in the recommendation, protection was increased substantially over the decade in order to assist industry development in the face of growing unemployment and external payment difficulties—problems destined to increase during the Depression.

By 1929, 440,000 people were employed in manufacturing—34 per cent above the 1913 level. Until that time more than 60 per cent of manufacturing employment was concentrated in metals and machinery, processed foods, and clothing and textiles, with the latter leading the field in terms of size. However, within manufacturing, average employment was declining steadily in clothing and textiles and rising in metals and machinery and by 1928–29, this latter group had become a major contributor to both the employment and production of the manufacturing sector.

Within the metals and machinery sector, production of motor vehicles and associated activities accelerated during this period, in response to the expanding demand for consumer durables which characterised the 1920s. Holden's Motor Body Builders were well established, the Ford Motor Company opened a large motor body assembly plant at Geelong in 1925, while General Motors commenced operations in Adelaide the following year.

In summary, the increased activity of this period saw Australia's productive capacity significantly broadened under the stimulus of wartime shortages and subsequent tariff protection. But despite the great expansion of output and employment, many of the new industries were able to satisfy only a small proportion of domestic demand.

1930–1945: Depression to War's end

The Depression of the 1930s had its origins overseas although the structural weaknesses of the Australian economy made some contribution. Manufacturing growth in Australia was severely checked in the early years of the decade despite large and widespread increases in ordinary tariff rates in 1930 (the Scullin Tariff).

Though the sector's share of total employment had fallen from 22 per cent in 1920–21 to 18 per cent in 1930–31, manufacturing led the recovery in total employment, accounting for 25 per cent by the start of World War II. Domestic demand continued to grow. Skill levels of the labour force were increasing and overseas enterprises were bringing in new capital. Just as important were the new and sophisticated techniques being introduced, which included the processing of cement and rubber. In 1939 major industries included iron and steel, non-ferrous metals, machinery and engineering, electronic and electrical equipment, motor vehicle assembly and parts, food processing, textiles and clothing, wood products, and printing and publishing.

Some of the pre-1930 trends were continued in the following decade. Industrial metals, machines and conveyances continued to increase their share of manufacturing employment (32%) and value added (32.5%), whilst clothing, food, drink and tobacco continued to decline. By 1938–39 the manufacturing sector's contribution to GDP had reached 19 per cent, a level almost equal to the rural sector's 20 per cent.

When World War II broke out in 1939 the Australian manufacturing sector was sufficiently developed and diversified to respond to the demand for war materials and equipment. Industrialisation proceeded apace as Australia switched her resources to wartime manufacturing production. Key industries expanded and new ones developed rapidly to produce munitions, ships, aircraft, new kinds of equipment and machinery, chemicals, textiles and so on. By 1940–41 manufacturing's share of employment, at 25 per cent, had overtaken the rural sector's share and, combined with the efflux of men and women from the labour force to the armed services, contributed to a sharp fall in unemployment. The resultant acquisition of new skills and development of new strategies and techniques, with subsequent diversification of scientific and technical knowledge, established a firm basis for the growth of the post-war era.

1945–1968: post-war years of prosperity

After World War II Australia entered an era of sustained expansion, with all sectors experiencing growth. Large-scale immigration, increasing availability of raw materials after wartime shortages, technical and scientific progress, and capital inflow all contributed to growth.

Government intervention in the working of the economy became more pronounced, with macro stabilisation policies targeting specific goals such as full employment, growth and economic development. In addition, influence was brought to bear on the location of industries through government regional development policies. After 1945 it was agreed that State governments should promote decentralisation by offering incentives to certain industries, while the Commonwealth further assisted decentralisation through its allocation of defence activities and by encouraging migrants and overseas firms to establish themselves in provincial areas.

With the manufacturing sector seen as a vital element in this process of national development and growth, the protection of the pre-war tariff was continued, and the import licensing restrictions and controls retained until 1960 (apart from a short break after the Korean War wool boom). These measures undoubtedly allowed the domestic manufacturing sector to capture an increased share of the domestic market, reap economies of scale, and improve productivity to more internationally competitive levels.

In this environment, the manufacturing sector made the transition to peacetime activities without undue difficulty, but it was not until the early 1950s that labour and material shortages began to subside, and bottlenecks disappear. Larger-scale immigration, private capital investment and government works, particularly in infrastructure, set the tone for the remainder of the era and allowed rapid expansion. By 1960, manufacturing's share of GDP and employment had reached historic highs, and Australia's industrial base could claim to have reached maturity.

In this period, significant structural change occurred within the manufacturing sector itself. In the traditional, more labour intensive industries such as food, clothing, sawmilling and wood products, the relative share of employment and production declined whilst the more capital intensive groups such as chemicals, electrical goods and industrial metals, machines, and conveyances steadily increased their shares. The growth of these industries was tied to their increasing comparative advantage within the sector, and to the expansion of the domestic market due to rising incomes, high rates of population increase and the unsatisfied demands of the previous era for consumer goods.

The developing maturity of the motor vehicle industry created further demands for steel, glass, plastics and rubber. By 1960, the first indigenous vehicles had been produced and one person in sixteen in the workforce was employed in the manufacture, distribution or servicing sector of this industry.

The petroleum refining industry also grew to prominence in the 1950s to service the needs of both motorists and industry. In the 1960s, new petrochemical complexes using advanced technology were built to transform the by-products of the oil refining process to a variety of petrochemicals and synthetic materials. This basic chemicals industry allowed domestic production of inputs for the further development of the plastics, synthetic fibres and rubber industries and the chemicals, fertilizer, paint, adhesives and sealant industries. Demand for other consumer and producer goods arising in these years provided a challenge for the development of our electronics industries.

The structural changes which occurred during this time were extensive but, when Australia's manufacturing performance is compared with that of other developed countries over a similar time frame, Australia's record was not so impressive, particularly in the 1960s. By this time, the rapid growth afforded by the domestic market in the 1950s had ended, and, although manufacturing exports did increase, the rate of growth was small and compared poorly with other developed countries.

1968–1979: years of contrast

The era of the 1970s saw a sharp transformation in the world economic environment, from the relative stability and high growth of the post-war period to the inflation and low growth which followed the oil price shocks of the 1970s.

The onset of the oil price rises in 1973–74 led the world into recession and added greatly to inflation, with similar effects on most OECD countries—slower growth of GDPs, employment and trade. This combination of slow growth and inflation became known as stagflation, and affected all sectors of the Australian economy.

GROSS DOMESTIC PRODUCT AND EMPLOYMENT, BY SECTOR: AUSTRALIA

	Proportion of total GDP at factor cost (a) attributable to each sector				*Proportion of employment in each sector*			
Year	*Rural*	*Mining*	*Manufacturing*	*Services*	*Rural*	*Mining*	*Manufacturing*	*Services*
1900-01	19	10	12	59	n.a	n.a	n.a	n.a
1910-11	26	6	13	55	25	6	21	48
1920-21	28	3	13	56	24	3	22	51
1930-31	21	2	16	61	26	2	18	54
1940-41	(*b*) 20	(*b*) 3	(*b*) 19	(*b*) 58	19	2	25	54
1950-51	31	2	23	44	14	2	29	55
1955-56	16	2	28	54	13	2	28	57
1960-61	13	2	29	56	11	1	28	60
1965-66	10	2	27	61	9	1	26	63
1970-71	7	4	25	64	7	2	25	66
1972-73	8	4	24	64	7	1	24	68
1974-75	6	4	22	68	7	1	22	70
1976-77	5	4	21	70	7	1	21	71
1978-79	7	4	19	70	7	1	20	72
1980-81	6	4	20	70	7	1	20	72
1982-83	4	5	18	73	7	2	18	73
1983-84	5	5	18	72	6	2	18	74
1984-85	5	5	18	72	6	1	18	75

(*a*) At current prices. (*b*) 1938–39.
Source: Industries Assistance Commission, *Structural Change in Australia*, AGPS, Canberra, 1977.

What little employment growth there was in this period was dominated by the service sector. While levels of employment changed little in the mining sector, both the manufacturing and the rural sectors experienced substantial declines in employment levels between 1973 and 1980 (by 80,000 and 15,000 respectively). Manufacturing, as the hardest hit sector, saw its sectoral share of total employment fall from 25 per cent in 1970 to slightly less than 20 per cent in 1980, against a background of depressed growth in other sectors.

A number of changes occurred to reduce the competitiveness of local industry in the early 1970s. First, the world wide disturbances in exchange rates following the collapse of the Bretton Woods agreement, increases in oil and other commodity prices, and increasing competition from the newly-industrialised countries in Asia served to undermine Australia's existing comparative advantages. Second, domestic developments such as the move toward equal pay for women, sharp rises in real wage costs generally and tariff cuts compounded the problem, causing a squeeze of rapidly escalating costs and intensified import competition.

Quantitative import restrictions were imposed on those labour intensive goods where domestic employment levels were being severely affected and where overseas competition was rapidly undercutting domestic producers in terms of costs. These were predominantly the textiles, clothing, footwear, automotive and whitegoods industries.

Initially instituted as temporary measures to facilitate adaptation, import quotas were increasingly seen as indispensable to the survival of some local industries. They served to offset to some degree the overall decline in levels of assistance—estimated average effective rates of assistance to manufacturing fell from 36 per cent to 26 per cent in the years between 1968 and 1979, largely as a result of the 25 per cent general tariff cut of July 1973. More importantly, the quota restrictions undermined the reductions in dispersion of assistance across the sector which had been achieved by tariff reductions.

In addition to specific protective policies, the Government instituted an exchange rate devaluation in 1976 which helped to restore competitiveness to the manufacturing sector, but subsequent erosion due to inflation differentials, and reluctance to initiate further devaluation in order to 'fight inflation first', reduced the benefits to industry as the decade wore on.

In the late 1970s expectations of a 'resources boom' gained momentum, partly fuelled by the sustained high prices of energy (such as oil and coal). Investment attention thus swung to the mining sector, reducing the ability of the manufacturing sector to rationalise and make adjustments for a changed world economic environment.

1980–1986: declining terms of trade

Despite significant rationalisation, the manufacturing industry has responded to economic recovery more slowly than other sectors. Its shares of total GDP and employment declined further in the early 1980s, with both falling to 18 per cent in 1983. In 1983–84 the food, beverages and tobacco industry held the largest share of manufacturing output (22%) followed by transport equipment (10%). In 1983–84 the greatest share of manufacturing employment was in food, beverages and tobacco (17%), followed by other machinery and equipment (13%). The textiles, clothing and footwear industry held the smallest share of manufacturing output and employment at this time with 7 per cent and 10 per cent respectively.

Industries based on Australia's natural resources which are capital or skill-intensive, or based on new technology, have continued to experience relatively healthy growth. In the period 1978–79 to 1983–84 the paper, paper products, printing and publishing industry experienced the highest trend annual growth followed by chemical, petroleum and coal products.

Poor prices and market prospects for Australia's traditional exports of agricultural commodities and minerals together with a high level of imports saw a growing current account deficit in the mid-1980s. The need to restructure Australia's export profile if the balance of payments is not to be a continuing constraint on economic growth and, hence, rising living standards, is increasingly clear and acknowledged by most of the community. Australia needs to shift economic resources into the traded goods and services sector. Substantial depreciations of the Australian dollar in 1985 and 1986 provided an important opportunity to boost manufacturing. However, import substitution has been slow, partly due to the erosion of the manufacturing base over the last one and a half decades, and the non-competitive nature of many of Australia's imports. While there have been some signs of exports increasing in response to the devaluation, further large increases in this area will require considerable investment in plant and equipment.

Neither industry nor government expect the increased price competitiveness that has stemmed from the depreciation to be effective, on its own, in bringing about a revitalised manufacturing sector. Approaches and policies which emphasise non-price factors such as quality and marketing are now in evidence and will play an important role.

Recognition of Australia's changing circumstances and the imperative of restructuring the economy has changed industry policy from its former defensive role of reliance on protection against imports to a more positive, catalytic role in renewing the sector. Today's policies seek to deal with root causes of lack of competitiveness (such as outdated technology) rather than its symptom (loss of market share). This is reflected by positive assistance measures such as information and marketing services, programs sponsoring private research and development, and corporate taxation reform.

Towards 2000: the prospect for manufacturing

The future of manufacturing will be determined by a host of factors, many of them inter-related. Government policy will continue to play a significant influence, both in the creation of the economic environment in which business operates, and in specific industry policies. There is large public sector involvement in important economic spheres such as transport, energy, communications and education, and the future of Australian manufacturing will very much depend on the efficient and effective delivery of these services. The extent to which industry adapts to the rapidly changing technological environment, and its ability to recognise and respond to the exigencies of both domestic and international markets, will determine its capacity to achieve international competitiveness.

Industrialisation of Asian countries and the prospect that they will become highly competitive suppliers of an increasing range of goods, implies that a much higher proportion of Australian manufactured products will come under challenge. However, with its large population and rising income, Asia should generate increased demand for Australian products which are internationally competitive.

The availability of capital to finance greater investment will also be important to the growth of the manufacturing industry. The recent deregulation of capital markets, in tandem with government-sponsored venture capital schemes, is expected to diversify the range of finance available for potentially profitable investments.

The Australian manufacturing sector will continue to face pressures for change. Its ability to respond to these pressures will determine its future contribution to economic growth.

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CHAPTER NINETEEN

PRICES

RETAIL PRICES AND PRICE INDEXES

This section summarises briefly the history of retail price collections and the compilation of retail price indexes by the ABS since Federation. It also describes the present Consumer Price Index (CPI) and mentions briefly other statistics of retail prices currently available.

Retail price collections: historical perspective

The ABS commenced collecting information on retail prices in 1912, when prices of food and groceries and house rents were collected back to 1901 for the six State capital cities. Those data were used to construct the first retail price index for Australia (in later years called the A Series Index). From 1912 onwards, the collection of retail prices of food and groceries and house rents and the compilation of the (A Series) retail price index was extended to cover 30 'principal towns' (including the six State capital cities).

To supplement the official index relating to the 30 principal towns, between 1913 and the early 1920s, the collection of retail prices of food and groceries and house rents was extended progressively to cover more towns until 200 towns were being covered in 1923. This expanded collection continued annually until 1942 when it was discontinued.

In 1922, collection of retail prices of clothing and a selection of 'miscellaneous goods and services' was commenced in the 30 principal towns, with prices for the six State capital cities being obtained back to 1914. These prices, together with those already being collected for food and groceries and house rents, were used to construct an expanded retail price index (which in later years became known as the C Series Index).

The collection of prices of food and groceries, house rents, clothing and miscellaneous items included in the C Series Index continued on substantially the same basis through the 1920s, 1930s and most of the 1940s. In 1948 the range of items covered in the retail prices collections was expanded considerably in the capital cities and the additional prices were used to construct the new Interim Retail Price Index. The range of items covered in the retail prices collection has been progressively expanded ever since then to support successive expansions of the CPI.

Australian retail price indexes over the years

Prior to the introduction of the CPI, five series of retail price indexes had been compiled by the ABS:

- The A Series Index, covering only food and groceries and house rents (all houses), which was first compiled for the six State capital cities in 1912, with index numbers going back to 1901. From 1912 it was compiled for 30 'principal towns' until it was discontinued in 1938. A major use of the A Series Index was for wage adjustment purposes between 1913 and 1933.
- The B Series Index, covering only food and groceries and house rents (4 and 5 roomed houses), which was first compiled in 1925 with index numbers for the six State capital cities, being compiled for selected earlier years back to 1907. It was compiled for 30 principal towns from 1922 until it was discontinued in 1953. The B Series Index was introduced to replace the A Series Index for general statistical purposes but was never used for purposes of wage adjustment.
- The C Series Index, covering food and groceries, house rents (4 and 5 roomed houses), clothing, household drapery, household utensils, fuel, lighting, urban transport fares, smoking and some miscellaneous items, which was introduced in 1921 and discontinued in 1961.

- The food and groceries and rent components of the C Series Index were the same as for the B Series Index. The C Series Index was used for the purpose of wage adjustments from 1934 to 1953.
- The D Series Index, which was derived by combining the A Series and C Series Indexes and was compiled especially for wage adjustment purposes for a short period in 1933–34.
- The Interim Retail Price Index, covering food and groceries, house rent, clothing, household drapery, household utensils, fuel, lighting, urban transport fares, smoking and some services and miscellaneous items, which was first compiled in 1954 and discontinued in 1960. The Interim Index was intended to serve as a transitional index, but to some extent it replaced the C Series Index for general statistical purposes for a number of years prior to 1960; it was never used for wage adjustment purposes.

The most significant of these former retail price indexes was the C Series Index, which was the principal retail price index in Australia for close to forty years. It was first compiled in 1921, with index numbers for the six State capital cities being compiled retrospectively to 1914. The C Series Index was compiled for the 30 principal towns from 1925 onwards and in the 1940s some further towns (including Canberra) were added. The C Series Index was subject to a general review in 1936 and a slightly revised regimen was introduced. The C Series Index regimen then remained unchanged until the index was discontinued.

The main reason for the long interval without any review or change in composition of the C Series Index after 1936 was the recurrent changes in consumption patterns which occurred during and after World War II. It was considered impossible at the time to devise a revised weighting pattern which would be any more representative, on a continuous basis, of post-war consumption than was the existing weighting pattern of the C Series Index.

In 1953 the decision was made to continue to compile the C Series Index on its pre-war basis but to also compile the Interim Retail Price Index based as nearly as possible on the post-war pattern of consumer usage and expenditure. Nevertheless, the C Series Index continued to be regarded by the majority of users as the principal official index and was the one used in most indexation and escalation arrangements throughout the 1950s.

The Interim Retail Price Index was compiled only for the six State capital cities and Canberra. It was based on post-war consumption weights and retained the same weighting pattern throughout the period of its compilation, no attempt being made to revise its weights to take account of major changes in expenditure patterns and lifestyles that were occurring during the 1950s. During that decade, house renting was substantially replaced by home ownership, the use of motor cars partially replaced the use of public transport, and a variety of electrical appliances, and subsequently television, became widely used in households. During the same period, widely disparate movements occurred in the prices of different items of household consumer expenditure. It was considered that the combined impact of these factors made it impracticable to successfully introduce a comprehensive new retail price index during the period to 1960.

In 1960 a new approach was implemented. In place of the former long-term fixed-weight indexes, it was decided to compile series of shorter-term indexes which would be chain linked together to form long-term series. The Consumer Price Index, described later in this chapter, was the first price index of this kind constructed in Australia.

Long-term linked series

To provide an approximate long-term measure of retail price change for the period since the first Australian retail price index was compiled, a single series of index numbers has been constructed by linking together selected retail price index series from amongst those described above. The index numbers are expressed on a reference base 1945=100.0, which was the end of a period of relative price stability during World War II. The successive series linked together to produce this long-term series of index numbers are:

- from 1901 to 1914, the A Series Index;
- from 1914 to 1946–47, the C Series Index;
- from 1946–47 to 1948–49, a combination of the C Series Index (excluding rent) and the housing group of the CPI;
- from 1948–49 onwards, the CPI.

A considerable range of information on retail prices both in the form of index numbers and average retail prices, for various localities in Australia (in some cases back to 1901) is available in the *Labour Report*, published by the ABS continuously from 1912 to 1973. Various editions of the *Labour Report* also contained detailed descriptions of the methodology used in compiling the various indexes and details of their composition and weighting. A comprehensive description of the C Series Index, including details of its composition and weighting, was last published in *Labour Report* No. 41 in 1952. Descriptive material on the Interim Retail Price Index was last published in *Labour Report* No. 46 in 1958.

RETAIL PRICE INDEX NUMBERS—AUSTRALIA (*a*)
LONG TERM LINKED SERIES

(*Base: Year* 1945=100)

Year	*Index number*	*Year*	*Index number*	*Year*	*Index number*
1901	47	1931	78	1961	252
1902	50	1932	74	1962	251
1903	49	1933	71	1963	252
1904	46	1934	73	1964	258
1905	48	1935	74	1965	268
1906	48	1936	75	1966	276
1907	48	1937	78	1967	286
1908	51	1938	80	1968	293
1909	51	1939	82	1969	302
1910	52	1940	85	1970	313
1911	53	1941	89	1971	332
1912	59	1942	97	1972	352
1913	59	1943	101	1973	385
1914	61	1944	100	1974	443
1915	70	1945	100	1975	510
1916	71	1946	102	1976	579
1917	75	1947	106	1977	650
1918	80	1948	117	1978	702
1919	91	1949	128	1979	766
1920	103	1950	140	1980	844
1921	90	1951	167	1981	926
1922	87	1952	196	1982	1,028
1923	89	1953	205	1983	1,132
1924	88	1954	206	1984	1,177
1925	88	1955	211	1985	1,257
1926	90	1956	224	1986	1,370
1927	89	1957	229		
1928	89	1958	233		
1929	91	1959	237		
1930	87	1960	245		

(*a*) The index numbers relate to the weighted average of six State capital cities up to 1980; from 1981 they relate to the weighted average of eight capital cities.

Consumer Price Index

The Consumer Price Index (CPI) measures quarterly changes in the price of a 'basket' of goods and services which account for a high proportion of expenditures by metropolitan wage and salary earner households. This 'basket' covers a wide range of goods and services arranged in the following eight groups: food; clothing; housing; household equipment and operation; transportation; tobacco and alcohol; health and personal care; and recreation and education. The eight groups in turn are divided into 35 sub-groups and 107 expenditure classes.

From its inception in 1960, the CPI covered the six State capital cities. In 1964 the geographical coverage of the CPI was extended to include Canberra. From June quarter 1982 geographic coverage was further extended to include Darwin.

Index numbers at the Group and All Groups levels are published for each capital city and for the weighted average of eight capital cities. Sub-group index numbers are published for the weighted average of eight capital cities.

Conceptual basis for measuring price changes

The CPI is a quarterly measure of the change in average retail price levels. It provides a method of comparing the average price level for a quarter with the average price level of the reference base year or changes in the average price level from one quarter to the next. In measuring price changes, the CPI aims to measure only pure price changes (i.e. price changes excluding the effects of any changes in the quality or quantity of the goods or services concerned)—in other words to measure, each quarter, the change in the cost of purchasing an identical basket of goods and services. The CPI is a measure of changes in transaction prices—the prices actually paid by consumers for the goods and services they buy. It is not concerned with nominal, recommended or list prices (unless they are the prices consumers actually pay).

The CPI is often loosely, and incorrectly, referred to as a cost-of-living index. However, a true cost-of-living index (if such a measure could be compiled) would not be the same thing as a fixed-weight retail price index like the CPI. A cost-of-living index would need to take account of changes in standards of living and the substitutions that consumers make in response to changing market conditions, such as changes in supply, or in response to disparate price movements.

The CPI measures price change over time and does not provide comparisons between relative price levels at a particular date. For example, it does not show whether beef is dearer than lamb, or whether bus fares are dearer than train fares. The fact that the index number for any particular component is higher than that for another component in a particular quarter does not mean that the first component is more expensive than the second—it merely means that, since the reference base year, prices for the first component have risen more than prices for the second component. Similarly, the CPI does not provide any basis for measuring relative price levels between the different cities. For example it says nothing about whether prices are higher in Sydney or Perth—it shows only whether prices have changed more in Sydney or in Perth.

Index population

Because the spending patterns of various groups in the population differ somewhat, the pattern of one large group, fairly homogeneous in its spending habits, is chosen for the purpose of calculating the CPI. The CPI population group is, in concept, metropolitan employee households. For this purpose employee households are defined as those households which obtain the major part of their household income from wages and salaries; metropolitan means the eight capital city Statistical Divisions.

Weighting pattern

Each of the 107 expenditure classes in the current CPI has a fixed weight (i.e. the measure of its relative importance). Details of the weighting pattern are shown in the table on page 683. More detailed information on weighting is published in *The Australian Consumer Price Index: Concepts, Sources and Methods* (6461.0).

Changes in the weighting pattern have been made at approximately five-yearly intervals to take account of changes in household spending patterns. The CPI, in fact, comprises eleven separate series which have been linked to form a continuous series. The eleventh series (i.e. the current series) was introduced in the March quarter 1987, with a weighting pattern based on estimated household expenditure in 1984.

The CPI 'basket of goods and services' covers items which are considered representative of metropolitan households' spending habits and whose prices can be associated with an identifiable and specific quantity of a commodity or service. Income taxes and personal savings, on the other hand, do not form part of the CPI because they cannot be clearly associated with the purchase of a specific quantity of any goods or services.

Collecting prices

Since the CPI is designed to measure the impact of changing prices on metropolitan wage and salary earner households, price movements are monitored in the kinds of retail outlets or other establishments where such households normally purchase goods and services. This involves collecting prices from many sources including supermarkets, department stores, footwear stores, restaurants, motor vehicle dealers and service stations, dental surgeries, hotels and clubs, schools, hairdressers, travel agents, airlines, bus operators, house builders, real estate developers, electricians and plumbers. Items such as bus, rail and air fares, electricity and gas charges, telephone charges and local authority rates are collected from the appropriate authorities. Information on rents is obtained from property management companies and government housing authorities. In total, around 100,000 separate price quotations are collected each quarter.

Prices of the goods and services included in the CPI are generally collected quarterly. However, some important items are priced monthly or more frequently (e.g. bread, fresh meat and fish, fresh fruit and vegetables, petrol, alcohol and tobacco) and a small number are collected annually (e.g. seasonal clothing, local government rates and charges).

The bulk of items for which prices are collected quarterly are priced at the middle of the mid-month of the quarter (i.e. in August, November, February and May), but, to facilitate a more even spread of the field collection workload, some goods and services are priced in the first or third months of each quarter. Items priced in the third month are generally those subject to price changes at discrete points of time (e.g. electricity and postal charges); in these cases information is obtained of any changes in price during the quarter so that an average price for the whole quarter can be calculated.

The prices used in the CPI are those that any member of the public would have to pay on the pricing day to purchase the specified good or service. Any sales or excise taxes which the consumer must pay when purchasing specific items are included in the CPI price. Sale prices, discount prices and 'specials' are reflected in the CPI so long as the items concerned are of normal quality (i.e. not damaged or shop soiled) and are offered for sale in reasonable quantities. To ensure that the price movements reflect the experience of the bulk of the metropolitan population, the brands and the varieties of the items which are priced are generally those which sell in greatest volume.

Changes in quality

Since the CPI aims to measure the price change of a constant basket of goods and services over time it is necessary to ensure that identical or equivalent items are priced in successive time periods. This involves evaluating changes in the quality of goods and services included in the index and removing the effects of such changes so that the index reflects only the price change.

Treatment of home ownership costs

Although various changes have been made in the composition of the CPI since it was first introduced, for most of this time the index has remained fundamentally the same. However, a significant change in the basis of compilation of the CPI was made in 1987 when a new method of representing home ownership costs was introduced.

Up to the end of 1986, the main item included in the CPI to represent home ownership costs was the cost of purchasing houses—which was represented by new house prices. Other items included were local government rates and charges, house repairs and maintenance and house insurance. From March quarter 1987 the cost of purchasing houses was deleted from the CPI regimen and the cost of housing mortgage interest charges was included. The other three items continued to be included on the same basis as previously. A detailed explanation of the reasons for this significant change in the composition of the CPI is given in a special ABS information paper, *The Australian Consumer Price Index: Treatment of Home Ownership Costs* (6441.0), published in March 1987.

Periodic revision of the CPI

The CPI is periodically revised in order to ensure it continues to reflect current conditions. CPI revisions have usually been carried out at approximately five-yearly intervals, the most recent having been completed in March 1987. Previous revisions of the CPI were introduced at: December quarter 1963; December quarter 1968; December quarter 1973; September quarter 1974; September quarter 1976; and March quarter 1982. Following each revision, the new series with its changed composition and weighting pattern, is linked to the previous series to form one continuous series. The process of linking ensures that the continuous series reflects only price variations and not differences in costs of the old and new baskets.

Some additional information about the CPI is contained in a booklet entitled *A Guide to the Consumer Price Index* (6440.0). A detailed and comprehensive description of the CPI is published in *The Australian Consumer Price Index: Concepts, Sources and Methods* (6461.0).

CONSUMER PRICE INDEX—ELEVENTH SERIES: WEIGHTING PATTERN AT DECEMBER QUARTER 1986 WEIGHTED AVERAGE OF EIGHT CAPITAL CITIES

Groups and sub-groups	*Percentage contribution to the all groups CPI*
FOOD	**19.013**
Dairy products	1.536
Cereal products	1.978
Meat and seafoods	3.495
Fresh fruit and vegetables	1.921
Processed fruit and vegetables	0.852
Soft drinks, ice cream and confectionery	2.829
Meals out and take away foods	4.671
Other food	1.731
CLOTHING	**6.898**
Men's and boys' clothing	1.952
Women's and girls' clothing	3.102
Fabrics and knitting wool	0.499
Footwear	1.107
Dry cleaning and shoe repairs	0.238
HOUSING	**14.062**
Rents	4.450
Home ownership	9.612
HOUSEHOLD EQUIPMENT AND OPERATION	**18.429**
Fuel and light	2.442
Furniture and floor coverings	4.115
Appliances	1.535
Household textiles	0.690
Household utensils and tools	1.748
Household supplies and services	3.918
Postal and telephone services	1.478
Consumer credit charges	2.503
TRANSPORTATION	**17.025**
Private motoring	16.069
Urban transport fares	0.956
TOBACCO AND ALCOHOL	**8.173**
Alcoholic drinks	5.955
Cigarettes and tobacco	2.218
HEALTH AND PERSONAL CARE	**5.596**
Health services	2.992
Personal care products	1.943
Hairdressing services	0.661
RECREATION AND EDUCATION	**10.804**
Books, newspapers and magazines	1.229
Recreational goods	2.877
Holiday travel and accommodation	3.135
Recreational services	2.305
Education and child care	1.258
TOTAL ALL GROUPS	**100.000**

CONSUMER PRICE INDEX: ALL GROUPS INDEX NUMBERS

(Base of each index: *Year* 1980–81 = 100.0) (*a*)

Year	*Sydney*	*Mel-bourne*	*Brisbane*	*Adelaide*	*Perth*	*Hobart*	*Canberra*	*Darwin*	*Weighted average of eight capital cities*
1977–78	75.8	77.0	77.1	77.5	77.8	77.1	76.1	. .	(*b*)76.7
1978–79	82.4	83.1	83.4	83.2	84.1	83.1	82.3	. .	(*b*)83.0
1979–80	91.1	91.4	91.5	91.6	91.9	91.6	91.1	. .	(*b*)91.4
1980–81	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1981–82	110.2	110.4	110.7	110.5	111.2	110.0	110.7	111.1	110.4
1982–83	123.4	122.8	122.9	123.5	122.5	121.8	124.0	123.1	123.1
1983–84	130.9	132.1	131.7	132.3	131.0	129.9	132.3	130.2	131.6
1984–85	136.0	138.1	137.9	138.7	136.1	136.1	138.8	135.1	137.2
1985–86	147.5	149.8	149.0	150.2	147.1	147.9	150.8	146.2	148.7
1986–87	161.4	163.9	161.8	164.0	161.8	162.5	163.4	159.3	162.6

(*a*) The separate city indexes measure price movements within each city individually. They do not compare price levels between cities. (*b*) Prior to 1980–81 index numbers are for weighted average of six State capital cities.

CONSUMER PRICE INDEX: GROUP INDEX NUMBERS WEIGHTED AVERAGE OF EIGHT CAPITAL CITIES

(Base of each index: *Year* 1980–81 = 100.0 unless otherwise noted)

Year	*Food*	*Clothing*	*Housing*	*Household equipment and operation*	*Transport-ation*	*Tobacco and alcohol*	*Health and personal care*	*Recreation and education(a)*	*All groups*
1977–78(*b*) . .	71.3	81.4	79.5	78.4	73.9	74.7	88.0	. .	76.7
1978–79(*b*) . .	79.5	87.3	84.7	83.3	80.9	86.4	83.4	. .	83.0
1979–80(*b*) . .	90.6	93.3	91.0	90.0	91.3	93.6	91.1	. .	91.4
1980–81 . . .	100.0	100.0	100.0	100.0	100.0	100.0	100.0	. .	100.0
1981–82 . . .	108.6	107.1	111.1	110.6	110.3	109.2	124.2	. .	110.4
1982–83 . . .	118.5	114.2	122.8	123.8	124.2	124.1	153.2	107.7	123.1
1983–84 . . .	127.7	120.9	131.5	132.6	134.8	139.6	146.5	114.5	131.6
1984–85 . . .	134.4	128.4	141.4	138.9	143.4	151.3	121.8	118.9	137.2
1985–86 . . .	144.7	139.0	153.4	150.2	155.5	165.1	133.0	129.5	148.7
1986–87 . . .	156.3	152.3	164.8	161.2	172.9	182.5	154.4	141.5	162.6

(*a*) Base March quarter 1982 = 100.0. Group index not compiled for earlier quarters. (*b*) Prior to 1980–81 index numbers are for weighted average of six State capital cities.

CONSUMER PRICE INDEX NUMBERS: AUSTRALIA AND OTHER COUNTRIES (*a*)

(Base of each index: *Year* 1980 = 100.0)

Period	*Australia (b)*	*Canada*	*Federal Republic of Germany*	*Indonesia*	*Japan*	*New Zealand*	*United Kingdom*	*United States of America*
Year—								
1981 . .	110	113	106	112	105	115	112	110
1982 . .	122	125	112	123	108	134	122	117
1983 . .	134	132	116	137	110	144	127	121
1984 . .	140	138	118	152	112	153	133	126
1985 . .	149	143	121	159	114	176	142	131
1986 . .	163	149	121	168	115	200	146	133
Quarter—								
1985—								
Sept. .	151	144	121	160	114	180	143	131
Dec. . .	154	145	121	161	116	181	143	132
1986—								
March	157	147	121	164	115	188	144	133
June . .	160	148	121	166	116	193	146	132
Sept. . .	164	150	120	168	115	200	146	133
Dec. . .	169	151	120	175	115	218	148	134

(*a*) The composition of these indexes varies considerably in the various countries. The index numbers show changes in prices in each country over time and do not measure relative price levels between countries. (*b*) Consumer Price Index (All Groups) converted to base: 1980 = 100.0.

Source: Monthly Bulletin of Statistics of the Statistical Office of the United Nations

Average retail prices

Average retail prices for a range of selected (mainly food) items have been published regularly since 1901. Since 1962, data on average retail prices in each of the capital cities have been published quarterly in *Average Retail Prices of Selected Items* (6403.0). Prior to that date information was published annually in the annual *Labour Report* (now discontinued).

Experimental indexes of relative retail prices of food

Since 1962 the ABS has conducted an annual survey of food prices in approximately 200 cities and towns throughout Australia. Information from this survey is used to compile index numbers measuring the relative levels of food prices in the different localities at the time the survey is conducted (currently in May each year). The index numbers are produced by combining the prices for the selected food items using a common set of weights (derived from the weighting pattern of the CPI Food Group). The resulting index numbers are expressed on the base: Weighted Average of Eight Capital Cities=100.

Index numbers for Queensland localities are published by the ABS Queensland office (6401.3). Index numbers for localities in other States are available from the ABS on request.

PRODUCER AND WHOLESALE PRICE INDEXES

Historical perspective

The first price index of this kind compiled by the ABS was the Melbourne Wholesale Price Index which was introduced in 1912 with index numbers compiled back to 1861 from prices extracted from newspapers and trade publications. Index numbers were compiled up to 1961. The index related chiefly to basic materials and foods weighted in accordance with consumption in about the year 1910 and neither the list of items nor the weighting was varied during the life of the index. A description of the index and a list of the commodities included was last published in *Labour Report* No. 38, 1949.

The next index published was the Wholesale Price (Basic Materials and Foodstuffs) Index which was introduced in 1939; index numbers are available for the period 1928 to 1970. The index related to commodities in their basic or primary form and prices were obtained as near as possible to the point where they made their first effective impact on the local price structure. With few exceptions, prices were obtained from Melbourne sources. The weights were based on estimates of the average annual consumption of the commodities in Australia during the period 1928–29 to 1934–35 inclusive. A list of the commodities and other information concerning the index was last published in *Labour Report* No. 53, 1967.

During the 1960s the ABS began producing a range of price indexes covering materials used and articles produced by defined sectors of the Australian economy. The following indexes are now published monthly:

- Price Index of Materials Used in House Building
- Price Index of Materials Used in Building Other than House Building
- Price Indexes of Materials Used in Manufacturing Industries
- Price Indexes of Articles Produced by Manufacturing Industry.

Prices are collected from representative suppliers or manufacturers of the materials or articles included in the indexes. Mid-month prices are generally used to compile the two building materials indexes and the Price Indexes of Articles Produced by Manufacturing Industry. Average monthly prices are mainly used to compile the Price Indexes of Materials Used in Manufacturing Industries.

A table giving a broad indication of long-term price changes, drawing on the producer and wholesale price indexes available, is given below on a common reference base: Year 1968–69 = 100.0. The Melbourne Wholesale Price Index and the Wholesale Price (Basic Materials and Foodstuffs) Index have been linked at 1928–29 to provide a continuous series.

PRODUCER AND WHOLESALE PRICE INDEXES

(Reference base: *Year* 1968–69 = 100.0)

	Melbourne Wholesale Price Index (All Groups)	*Wholesale Price (Basic Materials and Foodstuffs) Index (All Groups)*	*Price Index of Materials used in House Building (All Groups)*	*Price Index of Materials used in Building other than House Building (All Groups)*	*Price Indexes of Materials used in Manufacturing Industries (Manufacturing Division)*	*Price Indexes of Articles Produced by Manufacturing Industry (Manufacturing Division)*
1861	24.2	..	..	..	..	..
1871	19.3	..	..	..	..	..
1881	17.6	..	..	..	..	..
1891	14.9	..	..	..	..	..
1901	15.3	..	..	..	..	..
1911	15.7	..	..	..	..	..
1921	30.0	..	..	..	..	..
1928–29	28.3	28.3	..	..	..	..
1931–32	..	24.4	..	..	..	..
1936–37	..	25.5	..	..	..	..
1941–42	..	31.9	..	..	..	..
1946–47	..	37.0	..	..	..	..
1951–52	..	76.4	..	..	..	..
1956–57	..	88.4	..	..	..	..
1960–61	..	92.5	..	..	..	..
1961–62	..	86.4	..	..	..	..
1962–63	..	87.4	..	..	..	..
1963–64	..	89.0	..	..	..	..
1964–65	..	91.3	..	..	..	..
1965–66	..	95.4	..	..	..	..
1966–67	..	98.4	94.1	94.7	..	..
1967–68	..	99.7	96.6	96.8	..	..
1968–69	..	100.0	100.0	100.0	100.0	100.0
1969–70	..	101.3	104.3	104.6	102.6	103.9
1970–71	..	..	108.8	109.4	100.1	108.5
1971–72	..	..	115.4	116.5	102.6	113.9
1972–73	..	..	123.3	122.1	113.9	120.7
1973–74	..	..	142.3	138.1	134.7	134.6
1974–75	..	..	172.5	169.7	145.1	158.1
1975–76	..	..	195.8	195.3	158.6	177.8
1976–77	..	..	219.1	218.1	182.2	196.9
1977–78	..	..	237.1	236.5	198.5	213.8
1978–79	..	..	252.2	253.9	248.8	237.4
1979–80	..	..	284.9	286.9	321.8	274.9
1980–81	..	..	323.6	323.9	353.2	305.2
1981–82	..	..	355.3	359.8	358.9	328.9
1982–83	..	..	389.0	400.6	388.0	360.2
1983–84	..	..	419.2	422.7	402.1	382.8
1984–85	..	..	452.4	446.2	422.2	404.8
1985–86	..	..	484.6	481.8	442.9	430.3

Price Index of Materials Used in House Building

The Price Index of Materials Used in House Building was first compiled on a reference base 1966–67 = 100.0, using a weighting pattern derived from estimated material usage in 1968–69. Monthly index numbers on a 1966–67 = 100.0 reference base are available for the period July 1966 to September 1986. A detailed description of the first series, including its composition and weighting pattern, is given in the September 1970 issue of the publication *Price Index of Materials Used in House Building* (6408.0) and in *Labour Report* No. 55, 1970.

The current Price Index of Materials Used in House Building, on a reference base 1985–86 = 100.0, was introduced in October 1986 and linked to the previous series. The items included, and their weights, were derived from reported values of each material used in selected representative houses constructed in 1985–86. Further information concerning the method of compiling the index, including details of its composition and weighting pattern, is given in the October 1986 issue of the publication *Price Index of Materials Used in House Building* (6408.0).

PRICE INDEX OF MATERIALS USED IN HOUSE BUILDING —SIX STATE CAPITAL CITIES (*a*)

(Base of each index: *Year* 1985–86=100.0)

Year(b)	*Sydney*	*Melbourne*	*Brisbane*	*Adelaide*	*Perth*	*Hobart*	*Weighted average of six State capital cities*
1977–78	50.5	47.6	48.7	44.5	51.3	48.6	48.9
1978–79	54.2	50.2	51.7	48.0	54.3	51.8	52.0
1979–80	61.5	56.5	57.9	55.7	60.6	57.6	58.8
1980–81	69.1	64.8	66.9	63.5	68.4	64.0	66.7
1981–82	75.2	70.8	74.9	70.2	75.5	70.4	73.3
1982–83	81.0	78.2	82.2	79.0	82.5	76.7	80.2
1983–84	86.0	85.8	88.7	85.4	87.9	83.1	86.5
1984–85	93.1	93.3	94.6	92.7	93.4	92.5	93.4
1985–86	100.0	100.0	100.0	100.0	100.0	100.0	100.0

(*a*) The separate city indexes measure price movements within each city individually. They do not compare price levels between cities. (*b*) The index series for years prior to 1985–86 are based on the series previously published on a reference base 1966–67 = 100.0. They have been converted to reference base 1985–86 = 100.0 by linking the old and new series at September 1986.

Price Index of Materials Used in Building Other than House Building

The Price Index of Materials Used in Building Other than House Building was first compiled on a reference base 1966–67 = 100.0, using a weighting pattern derived from estimated materials usage in 1966–67. Monthly index numbers on a 1966–67 = 100.0 reference base are available for the period July 1966 to January 1981. A description of the first series, including its composition and weighting pattern, is given in the publications *Price Index of Materials Used in Building Other than House Building*, January 1969 (6407.0) and *Labour Report* No. 54, 1969.

The current Price Index of Materials Used in Building Other than House Building for the six State capital cities was introduced in February 1981 on reference base 1979–80 = 100.0. The index for Darwin was published for the first time in September 1982 on a reference base 1981–82 = 100.0.

This index measures changes in prices of selected materials used in the construction of buildings other than houses. Its composition reflects the usage of materials in the construction of buildings (other than houses) commenced in the three years ending June 1977.

Further information concerning the method of compiling the index, including details of its composition and weighting pattern can be obtained from the February 1981 and the September 1982 issues of the publication *Price Index of Materials Used in Building Other than House Building—Six State Capital Cities and Darwin* (6407.0).

The tables below show annual 'All groups' index numbers for each State capital city and Darwin and index numbers for selected building materials for the weighted average of six State capital cities. Monthly index numbers for selected materials and special combinations of materials are shown in each issue of the monthly price index publication *Price Index of Materials Used in Building Other than House Building—Six State Capital Cities and Darwin* (6407.0).

PRICE INDEX OF MATERIALS USED IN BUILDING OTHER THAN HOUSE BUILDING ALL GROUPS SIX STATE CAPITAL CITIES AND DARWIN *(a)*

	Weighted average of six State capital cities	*Sydney*	*Melbourne*	*Brisbane*	*Adelaide*	*Perth*	*Hobart*	*Darwin*
Base Year	1979–80=100.0							1981–82=100.0
1976–77(*b*)	76.0	75.5	76.6	77.0	74.5	76.0	77.8	n.a.
1977–78(*b*)	82.4	81.8	83.0	83.2	80.9	83.4	84.1	n.a.
1978–79(*b*)	88.5	88.3	88.5	88.9	87.3	89.4	89.6	n.a.
1979–80	100.0	100.0	100.0	100.0	100.0	100.0	100.0	n.a.
1980–81	112.9	113.1	112.7	113.2	113.8	112.2	111.6	n.a.
1981–82	125.4	126.6	123.5	126.3	127.3	123.8	122.9	100.0
1982–83	139.6	141.1	135.9	141.4	143.9	138.4	135.9	111.2
1983–84	147.3	148.1	143.4	151.7	152.6	145.4	145.7	118.3
1984–85	155.5	*r* 155.5	152.8	159.4	160.8	153.2	153.5	122.0
1985–86	167.9	167.4	165.2	169.6	174.9	168.1	167.1	131.1

(*a*) The seperate city indexes measure price movements within each city individually. They do not compare price levels between cities. (*b*) The index series for years prior to 1979–80 are based on the series previously published on a reference base 1966–67=100.0. They have been converted to the reference base 1979–80=100.0 by linking the old and new series in the year 1979–80.

PRICE INDEX OF MATERIALS USED IN BUILDING OTHER THAN HOUSE BUILDING INDEX NUMBERS FOR SELECTED BUILDING MATERIALS WEIGHTED AVERAGE OF SIX STATE CAPITAL CITIES

(Base of each index: *Year* 1979–80=100.0)

	Structural timber	*Clay bricks*	*Ready mixed concrete*	*Galvanised steel decking cladding and sheet products*	*Structural steel*	*Reinforcing steel bar fabric and mesh*
1980–81	113.5	114.2	113.2	113.4	114.5	114.6
1981–82	123.3	127.4	123.7	127.3	128.1	126.4
1982–83	133.8	142.6	143.3	138.7	138.8	138.9
1983–84	144.9	151.6	149.6	145.3	141.4	148.6
1984–85	160.6	162.9	158.6	150.8	147.6	148.2
1985–86	172.2	173.7	162.6	157.1	158.0	156.8

	Aluminium windows	*Conductors (mains cable and circuitry)*	*Lamps and light fittings*	*Non-ferrous pipes*	*Builders' hardware*	*Paint*
1980–81	112.5	105.2	109.6	95.4	113.6	118.9
1981–82	126.3	115.6	122.8	95.2	127.6	129.9
1982–83	136.2	135.2	137.8	106.0	143.9	149.5
1983–84	144.2	150.3	145.1	113.7	154.8	162.2
1984–85	152.7	171.9	151.0	122.1	163.8	177.0
1985–86	162.4	196.9	164.0	134.5	182.2	189.3

Price Indexes of Materials Used in Manufacturing Industries

The Price Index of Materials Used in Manufacturing Industry was first compiled on a reference base 1968–69=100.0, using a weighting pattern derived from estimated manufacturing usage in 1971–72. Monthly index numbers on a 1968–69=100.0 reference base are available for the period July 1968 to November 1985. A description of the first series, including its composition and weighting pattern, is given in the April 1975 issue of the publication *Price Index of Materials Used in Manufacturing Industry* (6411.0).

The current Price Indexes of Materials Used in Manufacturing Industries were introduced in December 1985 on a reference base 1984–85=100.0. Details of their composition and weighting pattern are given in the December 1985 issue of the publication *Price Indexes of*

Materials Used in Manufacturing Industries (6411.0). With a few exceptions the items included in the indexes were allocated weights in accordance with the estimated value of manufacturing usage in 1977–78.

These indexes measure changes in prices of materials (including fuels) used by establishments classified to the Manufacturing Division of the Australian Standard Industrial Classification 1983 (ASIC). The indexes are on a net 'sector' basis; that is, each relates only to those materials which are used in the defined sector of Australian manufacturing industry and which have been produced by establishments outside that sector. The following sector price indexes are published:

(i) a net index for the Manufacturing Division of ASIC; and
(ii) net indexes for ten sub-divisions and four groups within the Manufacturing Division.

In addition, indexes are published for selected categories of materials, some of which are presented below.

PRICE INDEXES OF MATERIALS USED IN MANUFACTURING INDUSTRIES *(a)*: **SELECTED CATEGORIES OF MATERIALS**

(Base of each index: *Year* 1984–85 = 100.0) *(b)*

	Imported materials				*Home produced materials*				
	Agricultural	*Mining*	*Manufacturing*	*Total imported materials*	*Agricultural, forestry and fishing*	*Mining*	*Electricity*	*Total home produced materials*	*All materials*
1976–77	69.8	34.4	51.3	45.3	48.6	33.5	41.1	42.1	43.2
1977–78	81.9	37.0	56.8	49.9	51.4	37.4	44.5	45.6	47.0
1978–79	77.0	39.0	62.6	53.5	71.5	49.9	48.0	61.6	58.9
1979–80	88.8	65.5	73.8	71.1	87.5	71.3	51.6	78.7	76.2
1980–81	79.2	82.3	78.5	80.2	92.6	80.4	58.1	85.4	83.7
1981–82	71.4	89.6	81.9	84.6	88.5	83.6	70.0	85.3	85.0
1982–83	81.9	94.7	87.5	90.2	90.6	95.8	92.3	92.8	91.9
1983–84	92.8	92.5	91.2	91.8	98.0	95.3	97.1	96.9	95.3
1984–85	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1985–86	117.3	91.5	117.7	111.8	100.6	101.4	102.9	101.2	104.9

(*a*) The index is on a net basis and relates in concept only to materials that enter Australian manufacturing industry from other sectors of the Australian economy or from overseas. (*b*) The index series for years prior to 1984-85 are based on the series previously published on reference base 1968-69 = 100.0. They have been converted to reference base 1984-85 = 100.0 by linking the old and new series in the year 1984-85.

Price Indexes of Articles Produced by Manufacturing Industry

These indexes measure changes in the prices of articles produced by establishments classified to the Manufacturing Division of the Australian Standard Industrial Classification (ASIC). Indexes are on a 'net basis', i.e. they relate in concept only to those articles which are produced in defined sectors of Australian manufacturing industry for sale or transfer to other sectors or for export or for use as capital equipment. Articles which are sold or transferred to other establishments within the sector for further processing as materials, components, fuels, etc. are excluded.

The following sector price indexes are published:

(i) a net index for the Manufacturing Division of ASIC (known as the *All Manufacturing Industry Index*), and
(ii) a net index for each of the twelve sub-divisions within the Manufacturing Division.

The reference base of the indexes is the year 1968–69 = 100.0. Their composition and weighting reflect estimated net sector production in the year 1971–72.

The items included in the indexes are combined for publication purposes using the structure of ASIC.

Further information concerning the method of compiling monthly index numbers for each index, including details of their composition and weighting, is shown in the June 1976 issue of the publication *Price Indexes of Articles Produced by Manufacturing Industry, Australia* (6412.0). Further information about the indexes is also shown in *Year Book* No. 62.

PRICE INDEXES OF ARTICLES PRODUCED BY MANUFACTURING INDUSTRY (*a*)

(Base of each index: *Year* 1968–69=100.0)

		Net subdivision indexes (b)					
Year	*All Manufacturing Industry Index (c)*	*Food, beverages and tobacco (21-22)*	*Textiles (23)*	*Clothing and footwear (24)*	*Wood, wood products and furniture (25)*	*Paper, paper products and printing (26)*	*Chemical, petroleum and coal products (27)*
1976–77	196.9	180.0	178.6	208.1	246.8	212.8	182.4
1977–78	213.8	195.6	193.3	225.2	264.0	231.7	200.7
1978–79	237.4	226.4	205.1	238.4	280.4	245.0	233.1
1979–80	274.9	266.5	228.8	255.3	315.5	269.6	307.4
1980–81	305.3	290.9	252.7	276.5	357.3	304.2	366.8
1981–82	328.9	301.9	270.6	298.1	388.4	346.0	400.9
1982–83	360.2	328.2	286.7	316.0	424.9	390.4	442.4
1983–84	382.8	355.5	305.8	333.2	455.4	413.6	456.8
1984–85	404.8	377.0	322.6	352.1	494.3	442.2	480.8
1985–86	430.3	399.1	348.2	376.7	530.4	472.4	499.9

Year	*Glass, clay and other non-metallic mineral products (28)*	*Basic metal products (29)*	*Fabricated metal products (31)*	*Transport equipment (32)*	*Other industrial machinery and equipment and household appliances (33)*	*Miscellaneous manufacturing products (34)*
1976–77	202.5	200.6	244.9	195.0	199.4	176.0
1977–78	219.8	214.0	268.7	211.6	215.3	192.4
1978–79	236.8	237.2	287.7	230.2	232.2	209.8
1979–80	265.2	282.7	323.9	252.2	261.3	252.5
1980–81	300.2	297.8	371.6	275.7	289.7	273.9
1981–82	337.2	315.3	414.2	303.2	320.7	289.5
1982–83	382.1	345.5	452.5	335.4	353.1	313.4
1983–84	404.0	365.5	480.1	358.9	372.6	342.1
1984–85	429.2	381.0	505.3	378.7	390.2	361.4
1985–86	449.8	396.4	534.4	417.5	417.6	388.1

(*a*) For a full description of Division C, 'Manufacturing' and the subdivisions within the Manufacturing Division, *see Australian Standard Industrial Classification* (ASIC), *Preliminary Edition*, 1969. (*b*) These indexes are on a net subdivision basis; the index for each subdivision relates in concept to articles which are produced in that subdivision for sale or transfer outside the subdivision. (*c*) This index is on a net division basis and relates in concept only to articles which are produced in the Manufacturing Division of ASIC for sale or transfer outside the Division.

FOREIGN TRADE PRICE INDEXES

Historical perspective

Export Price Index

An index of export prices has been published by the ABS since 1901. The first index was compiled annually from 1901 to 1916–17 as a current weighted unit value index.

The method of calculation was changed in 1918 to incorporate fixed weights. Weights for all principal exports were calculated based on the average quantities of exports for the period January 1897 to June 1916. These weights were applied to the average unit values of each export in successive years, and a weighted average index of 'price' movements was derived. This index was published for the years 1897 to 1929–30.

An index of export prices was not published again until 1937 when two new series of monthly export price indexes were published, compiled back to 1928. One index used fixed weights and the other used changing weights. The most important methodological change introduced with these indexes was the use of actual export prices in place of unit values. The indexes were compiled until 1962.

The next index was introduced in August 1962 with index numbers compiled back to July 1959. This was a fixed weights index with reference base 1959–60 = 100.0. The weights were based on the average annual value of exports during the five years 1956–57 to 1960–61. By 1969–70 there had been a substantial shift in the relative importance of commodities exported and from July 1969 a new interim series was linked to this index, still with reference base 1959–60 = 100.0, but using weights based on the annual value of exports in 1969–70. Four new commodities iron ore, bauxite, alumina and mineral sands were included. The interim index was published until June 1979 when it was replaced by the current Export Price Index.

Import Price Index

The first issue of the Import Price Index produced by the ABS was released in May 1983 with index numbers compiled from September quarter 1981 onwards, on a reference base 1981–82 = 100.0. This index replaced an import price index previously published by the Reserve Bank of Australia on a reference base 1966–67 = 100.0. The Reserve Bank's import price index was published from 1928 until September 1982.

A table giving a broad indication of long term price changes, drawing on the foreign trade price indexes available, is given below.

FOREIGN TRADE PRICE INDEXES

(Reference base: *Year* 1968–69=100)

Year	*Export Price Index (All Groups)*	*Import Price Index (All Groups)*
1901	15	..
1911	17	..
1921–22	25	..
1931–32	18	22
1936–37	29	21
1941–42	27	35
1946–47	53	51
1951–52	123	92
1956–57	115	91
1960–61	93	95
1961–62	94	94
1962–63	99	94
1963–64	112	96
1964–65	103	97
1965–66	105	99
1966–67	103	100
1967–68	98	99
1968–69	100	100
1969–70	101	103
1970–71	99	108
1971–72	102	114
1972–73	131	113
1973–74	157	131
1974–75	177	189
1975–76	193	214
1976–77	216	246
1977–78	227	278
1978–79	256	307
1979–80	309	403
1980–81	328	450
1981–82	332	458
1982–83	360	506
1983–84	369	524
1984–85	396	580
1985–86	417	659

Source: The sources used for the Import Prices Index are the *Reserve Bank of Australia Bulletin* up to and including 1981–82, and the ABS *Import Price Index* (6414.0) thereafter.

Current indexes

The ABS compiles price indexes for merchandise imported into and exported from Australia. The Export Price Index is compiled and published monthly while the Import Price Index is compiled and published quarterly. Both indexes are calculated using fixed weights. Prices are collected from representative importers or exporters of the goods included in the indexes. Average monthly prices are used to compile the Export Price Index and average quarterly prices are used to compile the Import Price Index. Published index numbers for financial years are simple averages of the relevant monthly or quarterly index numbers. Annual index numbers for these indexes are shown below.

Import Price Index

The Import Price Index measures changes in prices of 'imports of merchandise' into Australia. The index numbers for each quarter relate to prices of imports landed in Australia during the quarter.

The commodities directly represented in the index were selected on the basis of their import values and were allocated weights in accordance with the average value of imports for each commodity over the three years ended June 1981.

The selected commodities are combined for publication purposes into broad index groups using three different classifications:

(i) Australian Import Commodity Classification (AICC) 1980–81 (1204.0)
(ii) Australian Standard Industrial Classification (ASIC) 1978 (1201.0)
(iii) United Nations Classification by Broad Economic Categories (BEC) 1976

In addition, BEC categories have been rearranged to form the broader end use classes: Capital goods, Intermediate goods and Consumption goods. Index numbers based on AICC and BEC are presented below.

Further information concerning the method of compiling the index, including details of its composition and weighting pattern, can be obtained from the December quarter 1982 issue of the publication *Import Price Index* (6414.0). More detailed index numbers are shown in the quarterly publication *Import Price Index, Australia* (6414.0).

IMPORT PRICE INDEX INDEX NUMBERS BASED ON THE AUSTRALIAN IMPORT COMMODITY CLASSIFICATION (AICC)

(Base of each index: *Year* 1981–82=100.0)

		AICC Sections								
Year	*All groups*	*Food and live animals chiefly for food. (0)*	*Beverages and tobacco (1)*	*Crude materials inedible except fuels (2)*	*Mineral fuels lubricants and related materials (3)*	*Animal and vegetable oils fats and waxes (4)*	*Chemicals and related products n.e.s. (5)*	*Manufactured goods classified chiefly by material (6)*	*Machinery and transport equipment (7)*	*Miscellaneous manufactured articles and non-monetary gold (8 & 9 part)*
1983–84	114.4	123.0	128.9	107.9	104.2	135.9	106.7	114.4	118.6	118.9
1984–85r	126.5	139.2	139.8	121.0	117.4	146.5	115.4	127.4	130.2	130.9
1985–86	143.8	157.2	164.8	135.9	101.0	110.9	132.8	151.0	157.5	155.5

IMPORT PRICE INDEX INDEX NUMBERS FOR BROAD ECONOMIC CATEGORIES (BEC) AND END USE CLASSES

(Base of each index: *Year* 1981–82=100.0)

	Broad economic categories						*End use classes*		
Year	*Food and beverages*	*Industrial supplies not elsewhere specified*	*Fuels and lubricants*	*Capital goods (except transport equipment) and parts and accessories thereof*	*Transport equipment and parts and accessories thereof*	*Consumer goods not elsewhere specified*	*Capital goods*	*Intermediate goods*	*Consumption goods*
1983–84	122.9	110.8	104.2	116.9	123.8	116.8	116.6	111.5	118.9
1984–85r	137.6	123.2	117.4	127.5	137.4	127.4	127.7	124.2	130.1
1985–86	152.5	142.3	101.0	152.7	171.2	150.9	154.9	134.9	154.0

Export Price Index

The current Export Price Index was introduced in July 1979. It relates to 'all exports of merchandise' from Australia. The index numbers for each month relate to prices of those exports of merchandise that are physically shipped from Australia during that month.

The reference base of the index is the year 1974–75 = 100. The commodities directly represented in the index were selected on the basis of their export values and were allocated weights in accordance with the average value of exports for each commodity over the three years ended June 1977.

The selected commodities are combined for publication purposes into broad index groups using two different classifications:

(i) Australian Export Commodity Classification (AECC) 1978–79 (1203.0)
(ii) Australian Standard Industrial Classification (ASIC) 1978 (1201.0)

Further information concerning the method of compiling the index, including details of its composition and weighting pattern, can be obtained from the July 1979 issue of the publication *Export Price Index* (6405.0). More detailed index numbers are shown in the monthly publication *Export Price Index, Australia* (6405.0).

EXPORT PRICE INDEX: INDEX NUMBERS BASED ON AUSTRALIAN EXPORT COMMODITY CLASSIFICATION (AECC)

(Base of each index: *Year* 1974–75 = 100)

		AECC Sections				
Year	*All groups*	*Food and live animals (0)*	*Crude materials inedible (except fuels) (2)*	*Mineral fuels and lubricants (3)*	*Animal and vegetable oils and fats (4)*	*Chemicals and other manufactured exports (5, 6, 7 and 8)*
1976–77 . . .	122	98	141	156	117	118
1977–78 . . .	128	100	149	167	136	125
1978–79 . . .	144	119	162	170	157	146
1979–80 . . .	174	145	191	198	169	188
1980–81 . . .	185	162	202	217	145	181
1981–82 . . .	187	147	219	247	139	178
1982–83 . . .	203	152	242	287	138	191
1983–84 . . .	208	163	242	269	168	203
1984–85 . . .	223	171	264	288	211	216
1985–86 . . .	235	180	277	308	183	229

EXPORT PRICE INDEX: INDEX NUMBERS BASED ON AUSTRALIAN STANDARD INDUSTRIAL CLASSIFICATION (ASIC)

(Base of each index: *Year* 1974–75 = 100)

	ASIC Divisions		
Year	*Agriculture, forestry, fishing and hunting (A)*	*Mining (B)*	*Manufacturing (C)*
1976–77	106	148	119
1977–78	105	159	127
1978–79	114	163	150
1979–80	137	180	190
1980–81	150	191	199
1981–82	153	221	191
1982–83	158	262	202
1983–84	169	244	212
1984–85	182	265	226
1985–86	184	290	237

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Monthly Summary of Statistics (1304.0)
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Export Price Index (6405.0)
Price Index of Materials Used in Building Other Than House Building (6407.0)
Price Index of Materials Used in House Building (6408.0)
Price Index of Copper Materials (6410.0)
Price Indexes of Materials Used in Manufacturing Industries (6411.0)
Price Indexes of Articles Produced by Manufacturing Industry (6412.0)
Import Price Index (6414.0)

CHAPTER TWENTY

HOUSING AND CONSTRUCTION

HOUSING

AN HISTORICAL PERSPECTIVE

To own one's own home has long been the ultimate goal of most Australians.

While home ownership has obvious benefits for the owner, it is also beneficial to the government. Governments see an adequately housed population as being more politically and economically stable, healthy and productive. Additionally, a healthy housing construction industry provides substantial employment both within the industry and in associated sectors of the economy—notably in banking, the real estate industry and manufacturing. It is no accident that Australia has the highest rate of private home ownership per head of population in the world. This has come about as a result of a variety of government initiatives and policies since Federation.

The need for housing and construction statistics has developed with these initiatives to the point where Australia's statistics are quite comprehensive. Of course, user requirements change with government policy changes, and more and different data will always need to be developed.

An historical perspective of Australia's housing statistics is presented below. More detailed current statistics are shown later in this chapter.

New dwelling statistics

These statistics were first collected in 1946–47 to provide data on expenditure on dwellings for inclusion in the Bureau's quarterly national accounts. This survey was one of several commenced around that period as the national accounts statistical system was developed.

The following tables and graphics provide an historical national perspective on the number of dwelling units approved from 1954–55 to 1986–87 together with dwelling commencements and completions from 1946–47 to 1986–87.

More detailed current data appear later in this chapter.

NUMBER OF NEW DWELLING UNITS, AUSTRALIA

	Approved			*Commenced(a)(b)*			*Completed(a)(b)*		
Year	*Private*	*Public*	*Total*	*Private*	*Public*	*Total*	*Private*	*Public*	*Total*
1946–47	n.a.	n.a.	n.a.	n.a.	n.a.	48,300	n.a.	n.a.	32,926
1947–48	n.a.	n.a.	n.a.	n.a.	n.a.	54,614	n.a.	n.a.	44,271
1948–49	n.a.	n.a.	n.a.	n.a.	n.a.	60,055	n.a.	n.a.	52,684
1949–50	n.a.	n.a.	n.a.	n.a.	n.a.	68,302	n.a.	n.a.	56,987
1950–51	n.a.	n.a.	n.a.	n.a.	n.a.	(c)83,914	n.a.	n.a.	(c)69,297
1951–52	n.a.	n.a.	n.a.	n.a.	n.a.	80,922	n.a.	n.a.	80,119
1952–53	n.a.	n.a.	n.a.	n.a.	n.a.	64,609	n.a.	n.a.	80,208
1953–54	n.a.	n.a.	n.a.	n.a.	n.a.	(c)76,877	n.a.	n.a.	(c)77,578
1954–55	67,465	18,752	86,217	n.a.	n.a.	77,237	n.a.	n.a.	82,110
1955–56	63,222	12,559	75,781	57,467	15,153	72,620	61,027	17,477	78,504
1956–57	62,273	13,459	75,732	55,374	14,083	69,457	55,266	13,170	68,436
1957–58	70,152	14,175	84,327	60,422	12,925	73,347	60,583	14,002	74,585
1958–59	75,694	14,275	89,969	66,859	14,828	81,687	69,744	14,414	84,158
1959–60	91,040	12,797	103,837	77,586	13,758	91,344	75,987	14,034	90,021
1960–61	77,354	16,262	93,616	74,740	14,149	88,889	80,642	13,823	94,465
1961–62	70,630	14,161	84,791	67,277	15,193	82,470	69,982	16,281	86,263
1962–63	79,474	14,915	94,389	73,578	14,691	88,269	73,543	14,204	87,747
1963–64	97,525	18,899	116,424	90,264	17,316	107,580	81,670	15,063	96,733
1964–65	105,285	17,506	122,791	97,534	19,175	116,709	95,477	17,174	112,651
1965–66	95,594	14,590	110,184	91,798	15,406	107,204	95,034	17,732	112,766

NUMBER OF NEW DWELLING UNITS, AUSTRALIA—*continued*

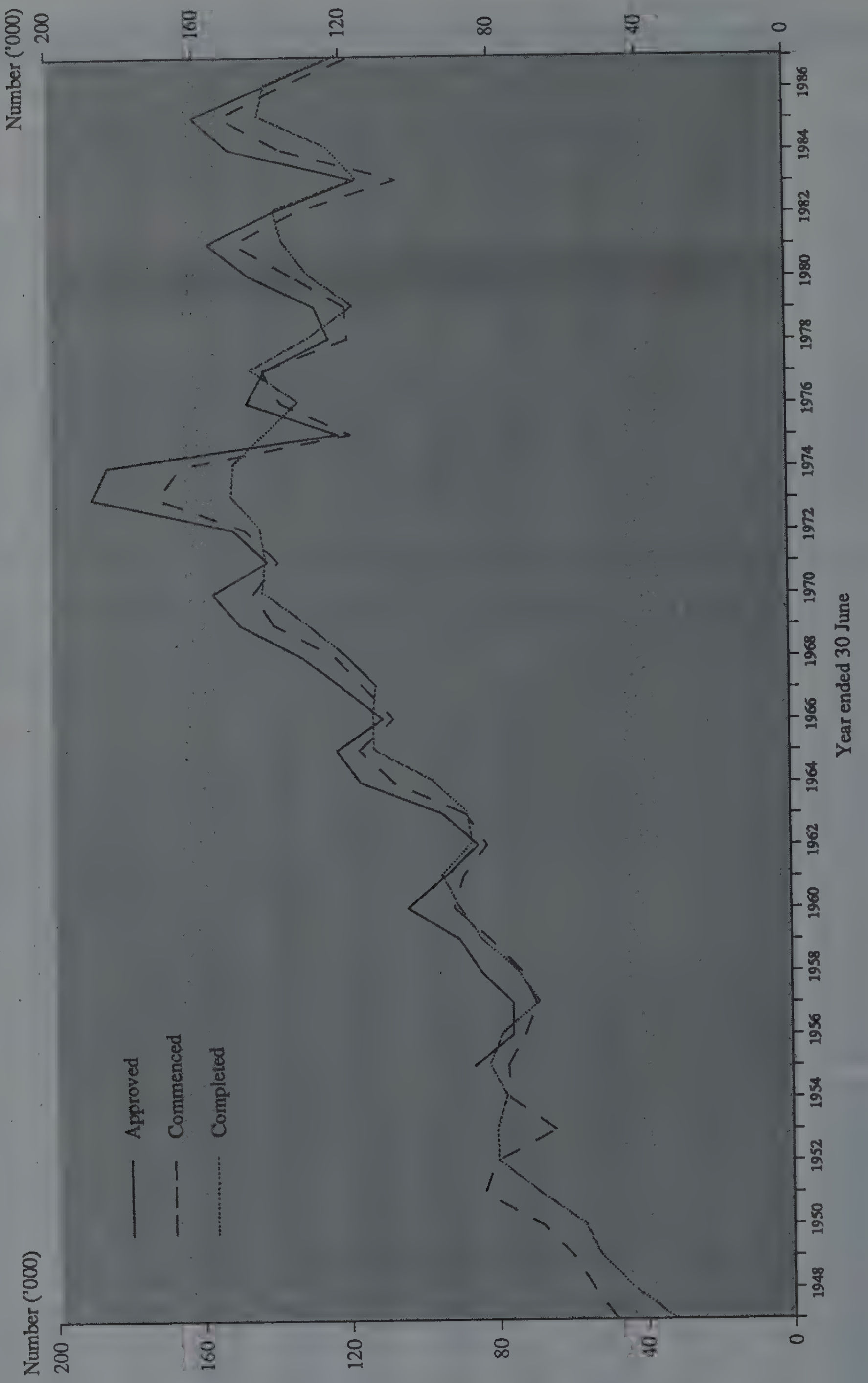
Year	*Approved*			Commenced(*a*)(*b*)			Completed(*a*)(*b*)		
	Private	*Public*	*Total*	Private	Public	Total	Private	Public	Total
1966–67	104,159	16,778	120,937	98,109	17,007	115,116	95,844	16,048	111,892
1967–68	118,848	13,280	132,128	108,612	14,505	123,117	104,589	15,581	120,170
1968–69	131,727	16,734	148,461	123,766	15,536	139,302	115,962	14,725	130,687
1969–70	138,063	17,868	155,931	127,199	17,780	144,979	125,933	16,279	142,212
1970–71	122,346	18,680	141,026	119,751	18,452	138,203	123,463	17,940	141,403
1971–72	136,673	13,573	150,246	131,945	15,085	147,030	125,308	17,446	142,754
1972–73	171,574	16,810	188,384	155,385	15,126	170,511	136,812	13,798	150,610
1973–74	169,615	14,769	184,384	150,134	14,288	164,422	138,612	11,416	150,028
1974–75	101,547	19,776	121,323	(*c*)99,103	(*c*)19,006	(*c*)118,109	(*c*)125,680	(*c*)15,415	(*c*)141,095
1975–76	134,205	11,908	146,113	123,766	13,292	137,058	112,300	19,726	132,026
1976–77	127,300	14,074	141,374	126,429	15,288	141,717	129,568	15,220	144,788
1977–78	110,823	12,949	123,772	105,496	13,200	118,696	114,337	14,599	128,936
1978–79	117,822	9,611	127,433	109,736	9,527	119,263	105,600	11,534	117,134
1979–80	134,720	10,435	145,155	(*c*)123,289	(*c*)10,566	(*c*)133,855	(*c*)119,096	(*c*)10,174	(*c*)129,270
1980–81	147,529	8,972	156,501	(*c*)139,800	(*c*)9,360	(*c*)149,160	(*c*)125,480	(*c*)10,393	(*c*)135,880
1981–82	130,498	8,006	138,504	123,840	8,425	132,270	128,970	9,332	138,310
1982–83	102,778	13,591	116,369	92,340	12,678	105,020	104,760	10,900	115,660
1983–84	134,888	15,859	150,747	122,180	14,862	137,040	110,710	13,064	123,770
1984–85	144,645	15,814	160,459	137,850	14,868	152,720	129,110	13,253	142,370
1985–86	126,017	14,638	140,655	122,500	13,300	135,800	126,540	13,931	140,480
1986–87	108,611	12,169	120,780	103,170	12,914	116,090	106,140	13,543	119,690

(*a*) Prior to July 1954 figures are partly estimated and exclude the Northern Territory. (*b*) From the September quarter 1980, figures for the number of new dwelling units have been rounded to the nearest ten units. (*c*) Break in series.

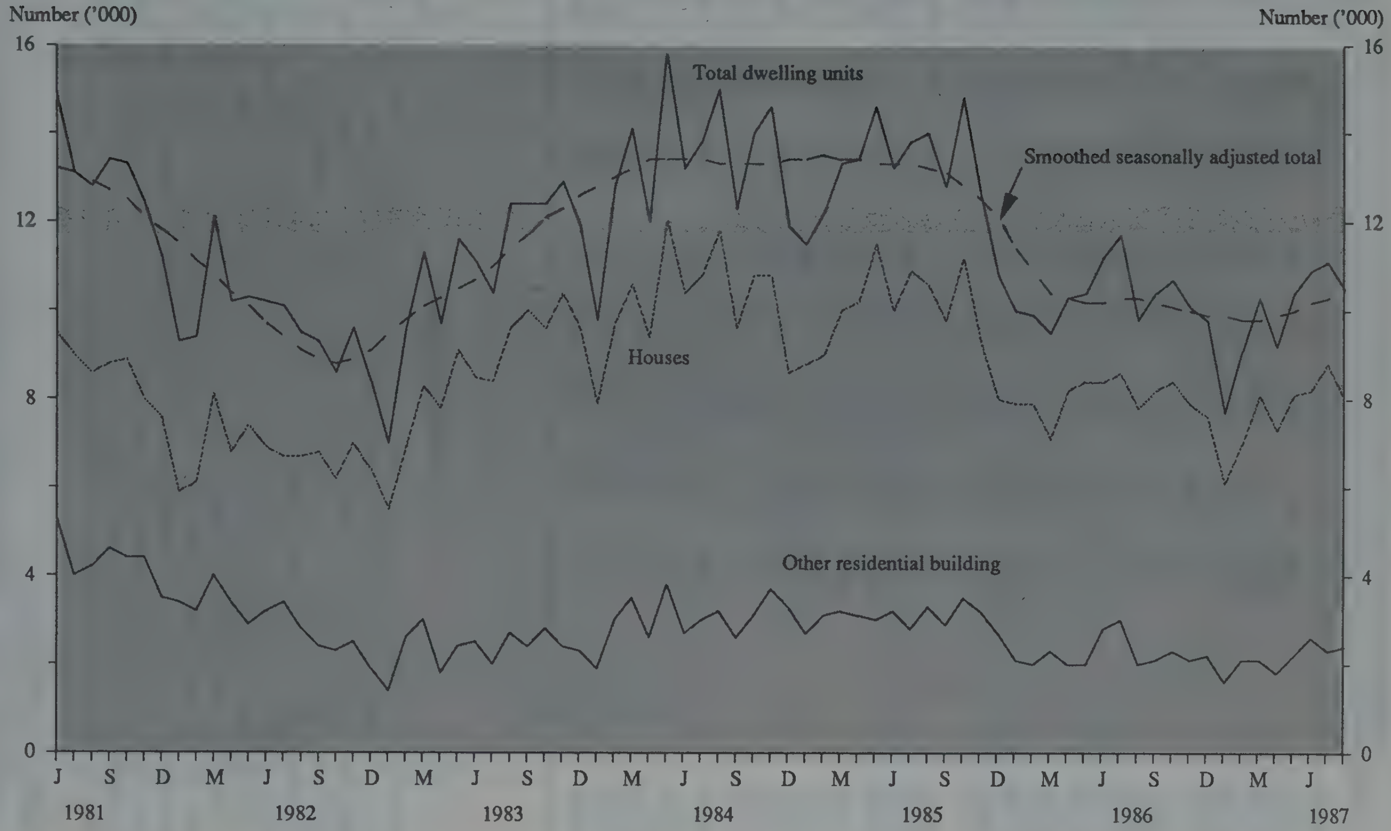
NUMBER OF NEW RESIDENTIAL BUILDING APPROVED, AUSTRALIA

Year	*Houses*			*Other residential*			*Total*		
	Private sector	*Public sector*	*Total*	*Private sector*	*Public sector*	*Total*	*Private sector*	*Public sector*	*Total*
1954–55	65,626	16,914	82,540	1,839	1,838	3,677	67,465	18,752	86,217
1955–56	61,287	11,547	72,834	1,935	1,012	2,947	63,222	12,559	75,781
1956–57	59,333	12,198	71,531	2,940	1,261	4,201	62,273	13,459	75,732
1957–58	65,455	13,314	78,769	4,697	861	5,558	70,152	14,175	84,327
1958–59	68,713	11,817	80,530	6,981	2,458	9,439	75,694	14,275	89,969
1959–60	74,964	11,235	86,199	16,076	1,562	17,638	91,040	12,797	103,837
1960–61	62,371	14,453	76,824	14,983	1,809	16,792	77,354	16,262	93,616
1961–62	61,741	11,828	73,569	8,889	2,333	11,222	70,630	14,161	84,791
1962–63	66,849	12,825	79,674	12,625	2,090	14,715	79,474	14,915	94,389
1963–64	73,461	16,634	90,095	24,064	2,265	26,329	97,525	18,899	116,424
1964–65	71,510	14,358	85 868	33,775	3,148	36,923	105,285	17,506	122,791
1965–66	67,892	12,685	80,577	27,702	1,905	29,607	95,594	14,590	110,184
1966–67	71,736	13,661	85,397	32,423	3,117	35,540	104,159	16,778	120,937
1967–68	78,287	10,700	88,987	40,561	2,580	43,141	118,848	13,280	132,128
1968–69	85,837	13,830	99,667	45,890	2,904	48,794	131,727	16,734	148,461
1969–70	87,978	13,670	101,648	50,085	4,198	54,283	138,063	17,868	155,931
1970–71	85,336	14,818	100,154	37,010	3,862	40,872	122,346	18,680	141,026
1971–72	95,776	10,494	106,270	40,897	3,079	43,976	136,673	13,573	150,246
1972–73	121,384	13,119	134,503	50,190	3,691	53,881	171,574	16,810	188,384
1973–74	112,964	11,360	124,324	56,651	3,409	60,060	169,615	14,769	184,384
1974–75	72,940	14,616	87,556	28,607	5,160	33,767	101,547	19,776	121,323
1975–76	105,629	9,218	114,847	28,576	2,690	31,266	134,205	11,908	146,113
1976–77	99,625	9,804	109,429	27,675	4,270	31,945	127,300	14,074	141,374
1977–78	90,753	7,758	98,511	20,070	5,191	25,261	110,823	12,949	123,772
1978–79	95,336	5,505	100,841	22,486	4,106	26,592	117,822	9,611	127,433
1979–80	104,044	5,995	110,039	30,676	4,440	35,116	134,720	10,435	145,155
1980–81	105,384	5,021	110,405	42,145	3,951	46,096	147,529	8,972	156,501
1981–82	87,874	4,729	92,603	42,624	3,277	45,901	130,498	8,006	138,504
1982–83	78,956	7,764	86,720	23,822	5,827	29,649	102,778	13,591	116,369
1983–84	109,225	8,927	118,152	25,663	6,932	32,595	134,888	15,859	150,747
1984–85	113,519	9,000	122,519	31,126	6,814	37,940	144,645	15,814	160,459
1985–86	101,010	7,309	108,319	25,007	7,329	32,336	126,017	14,638	140,655
1986–87	88,414	5,421	93,835	20,197	6,748	26,945	108,611	12,169	120,780

NUMBER OF NEW DWELLING UNITS, AUSTRALIA



NUMBER OF DWELLING UNITS APPROVED IN NEW RESIDENTIAL BUILDINGS, AUSTRALIA, MONTHS



NUMBER OF DWELLING UNITS APPROVED, STATES AND AUSTRALIA

	N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
1954–55	29,883	24,157	10,057	9,017	9,004	2,810	326	963	86,217
1955–56	25,527	22,577	9,703	8,132	6,221	2,666	288	667	75,781
1956–57	27,710	21,127	9,898	7,011	6,295	2,744	164	783	75,732
1957–58	30,061	24,099	10,887	9,353	5,789	2,544	321	1,273	84,327
1958–59	35,143	24,791	11,423	8,491	5,461	2,625	374	1,661	89,969
1959–60	41,811	29,065	12,472	9,328	6,447	2,732	440	1,542	103,837
1960–61	36,701	23,588	11,913	10,702	6,118	2,425	390	1,779	93,616
1961–62	32,640	21,405	10,752	8,536	6,883	2,644	471	1,460	84,791
1962–63	34,700	26,022	10,428	10,776	7,466	2,644	423	1,930	94,389
1963–64	43,484	32,042	12,583	13,744	9,277	2,813	612	1,869	116,424
1964–65	46,914	32,908	14,873	12,334	9,365	2,921	939	2,537	122,791
1965–66	39,249	29,468	15,754	10,935	9,202	2,646	749	2,181	110,184
1966–67	42,323	34,608	16,921	8,482	11,447	3,445	900	2,811	120,937
1967–68	47,409	38,500	16,311	7,719	15,119	3,734	1,336	2,000	132,128
1968–69	54,558	38,399	16,787	10,377	20,671	3,132	1,340	3,197	148,461
1969–70	54,959	40,369	17,920	12,506	20,637	3,436	2,534	3,570	155,931
1970–71	49,773	34,350	20,819	13,914	13,718	3,191	1,370	3,891	141,026
1971–72	49,456	38,721	25,850	13,025	14,060	3,393	1,571	4,170	150,246
1972–73	61,103	50,002	33,949	14,760	18,141	3,826	1,412	5,191	188,384
1973–74	62,081	45,490	32,052	16,757	16,830	4,230	2,032	4,912	184,384
1974–75	38,125	30,611	18,109	12,680	12,802	3,322	1,521	4,153	121,323
1975–76	32,133	39,398	24,609	16,815	21,387	4,436	2,793	4,542	146,113
1976–77	36,798	36,626	25,673	14,392	19,062	4,402	1,579	2,842	141,374
1977–78	37,735	28,551	24,982	9,533	15,899	3,689	1,338	2,045	123,772
1978–79	41,927	26,642	28,281	8,144	15,428	3,644	1,330	2,037	127,433
1979–80	55,311	26,823	31,268	8,614	16,630	3,319	1,693	1,684	145,342
1980–81	58,216	27,335	39,049	7,754	16,386	3,200	2,072	2,489	156,501
1981–82	44,781	24,863	38,138	8,123	15,652	2,730	2,047	2,170	138,504
1982–83	33,290	28,582	27,143	8,789	11,842	2,727	2,210	1,786	116,369
1983–84	40,911	36,727	33,535	13,490	17,195	3,687	2,726	2,476	150,747
1984–85	42,451	40,997	31,788	15,053	19,279	4,370	2,889	3,632	160,459
1985–86	37,224	37,533	26,696	10,940	18,559	4,108	1,793	3,802	140,655
1986–87	31,781	33,056	22,498	9,119	16,945	3,638	1,401	2,342	120,780

Census dwellings

At each census of the population, in addition to the questions relating to personal particulars, there have been a number of questions relating to dwellings. A 'dwelling' is defined as any habitation occupied by a household group living together as a domestic unit, whether comprising the whole or only part of a building, and includes, in addition to houses and self-contained flats, a great variety of dwellings ranging from a single-roomed shack to a multi-roomed hotel or institution. This section contains particulars of such information on dwellings as is available from the 1986 Census, together with information from earlier censuses.

Extensive information on dwellings obtained from censuses is available in the detailed tables of the publications issued for each individual census. A list of the 1986 Census publications is shown in the ABS *Catalogue of Publications, Australia* (1101.0). The most relevant 1986 Census publication is *Census 86—Summary Characteristics of Persons and Dwellings* (2479.0–2487.0). More detailed dwellings information is available on microfiche. Tables are listed in the *Catalogue of 1986 Census Tables* (2175.0).

Number of dwellings

The following table shows the number of occupied and unoccupied dwellings in Australia at each census from 1954 to 1986. Occupied dwellings are classified into 'private', 'caravans, etc. in caravan parks' and 'non-private' dwellings.

Private dwellings were classified by the census collector for the 1986 Census; collectors allocated each dwelling to one of the following categories:

Separate house
Semi-detached house
Row or terrace house
Medium density housing
Flat, unit in building, over three storeys
Caravan, tent, cabin, etc. in caravan park
Caravan not in caravan park, houseboat, etc.
Improvised home
House or flat attached to a shop, office, etc.

Caravans, etc. in caravan parks were treated as separate households in the 1986 Census. Previously, each caravan park was treated as a non-private dwelling.

Non-private dwellings include hotels, motels, boarding houses and hostels, educational, religious and charitable institutions, hospitals, defence and penal establishments, staff barracks and quarters, etc.

An unoccupied dwelling is defined as a structure built specifically for private living purposes and which is habitable though unoccupied at the time of the census. The total number of unoccupied dwellings shown for any area does not represent the number of vacant dwellings available for sale or renting.

DWELLINGS (*a*): AUSTRALIA: CENSUS YEARS

	Occupied				
Census	*Private*	*Caravans in caravan parks (b)*	*Non-private (b)*	*Total*	*Unoccupied*
1961 . . .	2,781,945	n.a.	35,325	2,817,270	194,114
1966 . . .	3,155,340	n.a.	33,917	3,189,257	263,873
1971 . . .	3,670,553	n.a.	24,006	3,694,559	339,057
1976 . . .	4,140,521	n.a.	21,543	4,162,064	431,200
1981 . . .	4,668,909	n.a.	22,516	4,691,425	469,742
1986 . . .	5,264,516	77,094	21,055	(*c*)5,285,571	543,539

(*a*) Excludes dwellings occupied solely by Aboriginals before 1966. (*b*) Prior to the 1986 Census, caravan parks were classified as non-private dwellings. Therefore, 1986 Census non-private dwelling counts are not comparable with previous censuses. (*c*) Excludes caravans, etc. in caravan parks.

The total number of occupied and unoccupied dwellings in each State and Territory at the Censuses of 1981 and 1986 were as follows:

DWELLINGS, BY STATE: CENSUS YEARS

	Census 30 June 1981		*Census 30 June 1986*	
State or Territory	*Occupied(a)*	*Unoccupied*	*Occupied(a)(b)*	*Unoccupied*
New South Wales	1,669,594	153,251	1,839,308	174,467
Victoria	1,243,451	124,522	1,360,594	143,264
Queensland	703,964	83,366	865,432	94,714
South Australia	433,841	42,407	477,618	48,546
Western Australia	405,997	42,100	469,511	53,851
Tasmania	136,269	17,765	150,142	19,470
Northern Territory	29,563	2,368	43,235	3,639
Australian Capital Territory . .	68,740	3,963	79,731	5,588
Australia	**4,691,419**	**469,742**	**5,285,571**	**543,539**

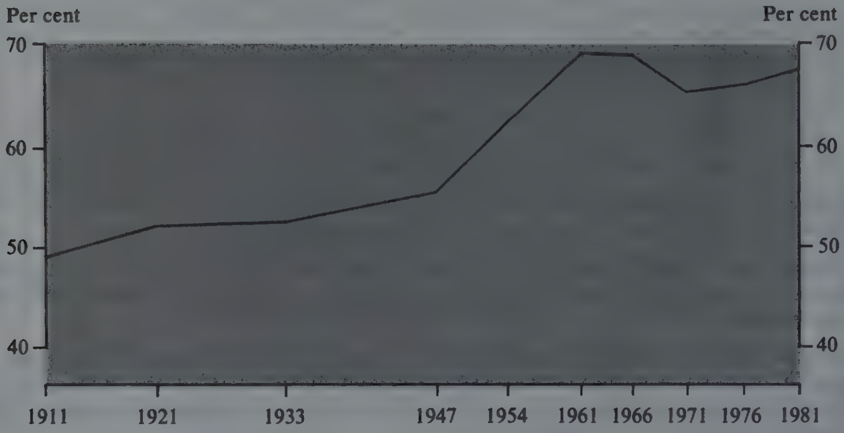
(*a*) Includes non-private dwellings. (*b*) Excludes caravans, etc. in caravan parks.

Commonwealth and State Government housing assistance

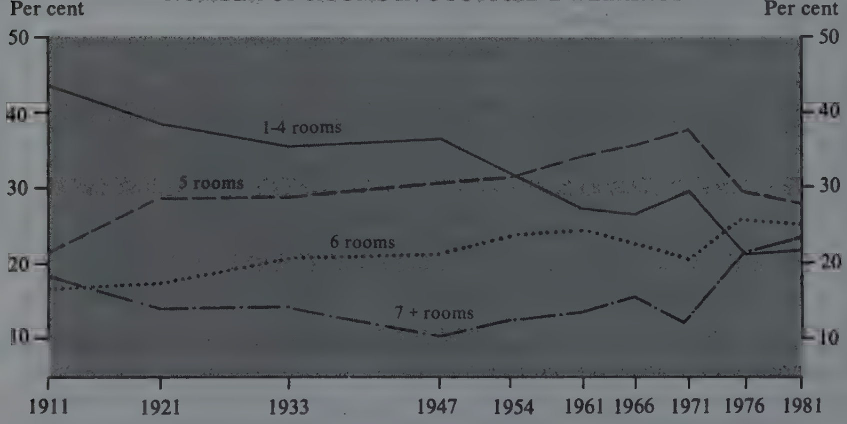
One of the Commonwealth's major objectives is to ensure that every Australian has adequate and appropriate accommodation at a price within his or her means. A range of assistance programs has been developed to target assistance to households in the owner-occupied, public

DWELLING STATISTICS AT CENSUSES

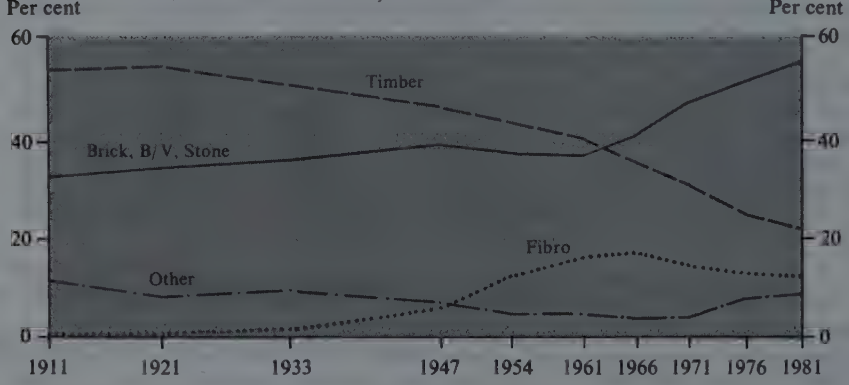
OCCUPIED PRIVATE DWELLINGS OWNED OR BEING PURCHASED



NUMBER OF ROOMS IN OCCUPIED DWELLINGS

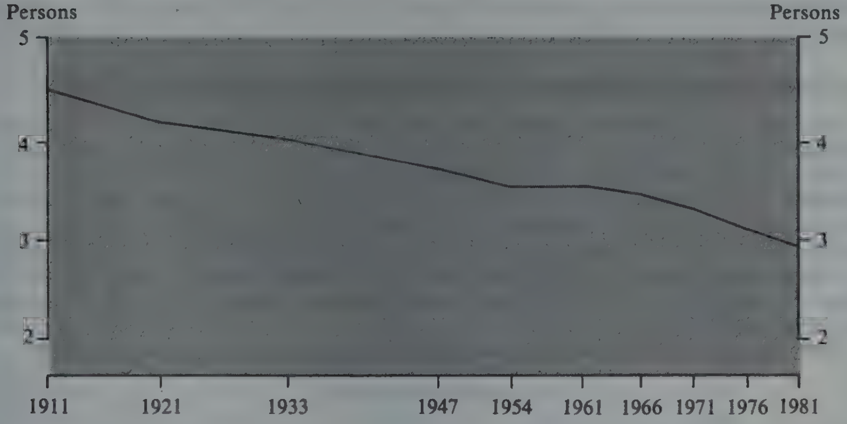


PRIVATE DWELLINGS, MATERIAL OF OUTER WALLS

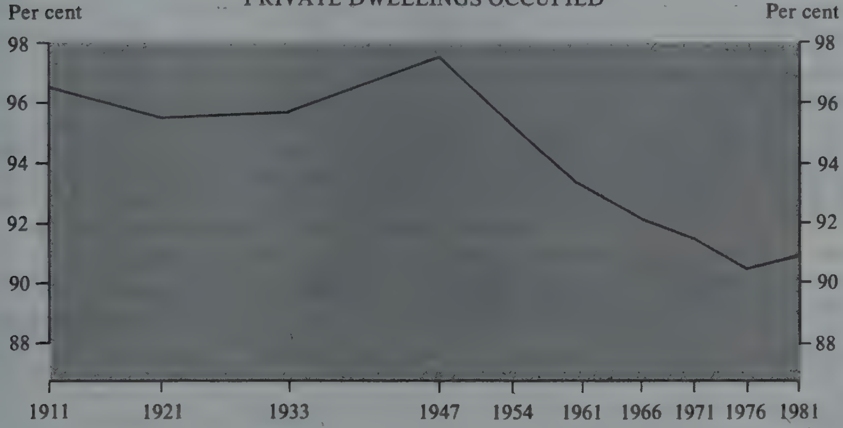


DWELLING STATISTICS AT CENSUSES

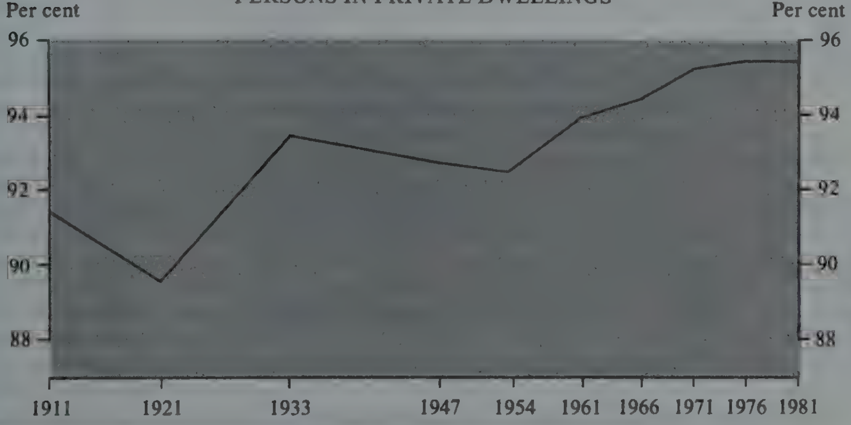
NUMBER OF PERSONS PER OCCUPIED PRIVATE DWELLING



PRIVATE DWELLINGS OCCUPIED



PERSONS IN PRIVATE DWELLINGS



housing and private rental housing sectors. The Government provides funds for public housing, supported accommodation services, crises accommodation, mortgage and rent relief, home purchase loans and home purchase subsidies to individuals and families.

The bulk of Commonwealth financial assistance for housing is provided through the First Home Owners Scheme (FHOS) and the Commonwealth-State Housing Agreement (CSHA).

First Home Owners Scheme

The First Home Owners Scheme was introduced on 1 October 1983. Applications for assistance under the *First Home Owners Act 1983* may be made by persons who contract to buy or build or who commence constructing their first home in Australia on or after 1 October 1983. There is no restriction on the marital status or age of the applicant. The home must be intended as the applicants' principal place of residence. At least one applicant must be an Australian citizen or must have the right to reside here permanently. Applicants cannot have owned a home in Australia previously, received assistance under the First Home Owners Scheme, or a grant under the Home Savings Grant Scheme or Home Deposit Assistance Scheme.

The income limits for a home acquired after 31 March 1987 are shown below.

INCOME LIMITS
($)

	Lower	*Upper*
Sole or joint applicants with two or more dependent children	26,000	34,000
Sole or joint applicants with one dependent child	25,000	33,000
Joint applicants without dependent children	23,000	31,000
Sole applicants without dependent children	11,500	15,500

The amount of assistance payable relates directly to the amount of taxable income of all the applicants. The income to be tested is, generally, the taxable income for the year before home acquisition. In certain circumstances income for the current financial year may be tested. New arrivals will be tested against income in the first full year as a taxpayer.

MAXIMUM ASSISTANCE AVAILABLE AND OPTIONS
FOR HOMES ACQUIRED FROM 1 OCTOBER 1983 TO 16 APRIL 1985

Benefit options	*No dependants*	*One dependant*	*Two or more dependants*
Option 1—	$	$	$
Subsidy only	5,000	6,500	7,000
Option 2—			
Subsidy	3,000	4,500	4,500
Lump Sum	1,500	1,500	2,000
Option 3—			
Subsidy	1,750	2,750	2,750
Lump Sum	2,500	3,000	3,500

MAXIMUM ASSISTANCE AVAILABLE AND OPTIONS
FOR HOMES ACQUIRED SINCE 17 APRIL 1985

Benefit options	*No dependants*	*One dependant*	*Two or more dependants*
Option 1—	$	$	$
Subsidy only	4,000	5,500	6,000
Option 2—			
Subsidy	2,300	3,800	3,800
Lump Sum	1,200	1,200	1,700
Option 3—			
Subsidy	1,250	2,250	2,250
Lump Sum	2,000	2,500	3,000

The subsidy is paid monthly, generally over five years, into a financial institution loan account. The lump sum is paid with the first monthly payment or, where requested, by early direct payment for deposit assistance or for settlement.

During the five year subsidy period the home must continue to be the applicant's principal place of residence. The subsidy will cease upon the sale of the home, but may recommence if a subsequent home is acquired within 12 months of the sale of the first home.

The following table sets out the operations of the scheme from 1 July 1986 to 30 June 1987.

FIRST HOME OWNERS SCHEME: OPERATIONS 1986–87

State	*Number of applications*		*Amount of benefit approval ($'000)*	*Amount of benefit paid ($'000)*
	Received	*Approved*		
New South Wales	12,655	10,813	42,573	51,785
Victoria	12,505	11,236	41,789	51,497
Queensland	8,540	7,643	30,609	37,827
South Australia	4,313	3,863	14,614	17,582
Western Australia	7,484	6,554	24,957	28,391
Tasmania	1,688	1,432	5,402	6,717
Northern Territory	240	237	824	1,228
Australian Capital Territory	1,555	1,408	5,360	5,917
Australia	**48,980**	**43,186**	**166,128**	**200,944**

1984 Commonwealth–State Housing Agreement—CSHA

The 1984 CSHA came into operation on 1 July 1984 following the renegotiation of the 1981 Agreement. The Agreement is set to run for a 10 year period with triennial reviews. Financial assistance under the 1984 Agreement is to be provided as a combination of grants and loans with at least 75 per cent to be provided as grants. Since 1984–85, all assistance was provided as grants. Each State decides on the distribution of untied funds between home purchase and rental housing assistance and is required to match these funds on a dollar for dollar basis with funds provided from their own resources.

The Commonwealth guaranteed a minimum level of funding of $530 million in 1984–85 and $510 million for 1985–86 and 1986–87. The base level funding has been increased to $700 million in 1987–88 and a minimum of at least this amount will be provided in 1988–89 and 1989–90. Total funding each year is determined in the Budget context. Total funding under the 1984 CSHA in 1987–88 is $700.0 million, comprising $550.0 million in 'untied' grants, $37.5 million for pensioners, $60.0 million for Aboriginals, $25.0 million for the Mortgage and Rent Relief Scheme, $15.5 million for the Crisis Accommodation Program and $12.0 million for the Local Government and Community Housing Program.

In addition to direct CSHA funding, since 1982–83 the States and the Northern Territory have been able to nominate further funds for public housing from their Loan Council allocations. A total of $584.7 million was nominated by the States in 1986–87, and in 1987–88 the States and the Northern Territory are entitled to nominate up to a maximum of $414.0 million. These additional funds are provided, subject to States matching the untied funds ($550.0 million in 1987–88), and are made available at the highly concessional interest rate of 4.5 per cent per annum over a 53 year period.

The Commonwealth Government is continuing to implement the major principles incorporated in the 1984 CSHA which focus on alleviating housing related poverty and achieving equitable distribution of housing assistance between tenures.

The first triennial evaluation of the 1984 Agreement was undertaken during 1986–87—the final year of the first triennium. The terms of reference stated that the evaluation would examine the effectiveness of CSHA rental and home purchase assistance programs and the use of CSHA funds, against the principles set out in the Agreement.

The following key issues were considered during the triennial evaluation:

- base level funding;
- State nomination of Loan Council borrowings for public housing;
- matching arrangements;
- accountability and use of revolving funds;

- allocation of funds between home purchase and rental assistance;
- funding of rent rebates;
- distribution of funds between States;
- specific purpose programs and co-ordination of programs;
- tenant participation;
- cost rents;
- home purchase assistance arrangements.

As a result of the evaluation, a number of changes are being made to the Agreement and program guidelines. Key changes are:

- tightening provisions for accountability and use of Loan Council funds to ensure that all revolving funds arising from these loans remain in public housing;
- ensuring States adhere to the non-discrimination principles of the Agreement by adding a specific requirement that young, single people be admitted to waiting lists;
- revising consultative arrangements for the Aboriginal rental program to ensure a greater federal role in establishing priority for Aboriginal housing;
- requiring States to allocate not less than 50 per cent of total funds for public rental housing from 1987–88;
- standardising income review and recoupment of interest subsidies under the home purchase assistance arrangements.

Home purchase assistance

Funds available under the CSHA for home purchase assistance comprise Commonwealth funds, revolving funds arising from the operation of previous home purchase programs and State funds. These funds are used principally to make loans to co-operative housing societies and approved State lending authorities for on-lending to home purchasers. Under the 1984 CSHA the annual interest rate charged by a State to societies and approved lending authorities is to be determined periodically by the Commonwealth and State Ministers with regard to the minimum Commonwealth Savings Bank market rate for housing loans. Eligibility conditions are set by each State, but loans can only be made to those who cannot obtain mortgage finance on the open market, or from other sources. Loan repayments are based on the borrowers' income.

Rental housing assistance

Funds available to the States for the provision of public rental housing include federal funds, internally generated funds arising from the operation of housing programs, proceeds from the sale of rental housing, and State contributions. Under the 1984 Agreement, each State determines eligibility for rental housing subject only to the condition that all people are eligible for assistance but priority goes to those most in need. As required under the 1984 CSHA, State Housing Authorities have implemented a cost rent formula for setting rents. Cost rents reflect the cost of providing rental housing.

Each State determines its policy on sales of rental dwellings but all sales are to be at market value or replacement cost and on the basis of a cash transaction. Home purchase assistance funds can be used to finance the purchase of rental dwellings.

COMMONWEALTH–STATE HOUSING AGREEMENT: NUMBER OF DWELLINGS PROVIDED IN 1985–86

	N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*Total*
Rental Housing Assistance—								
Commenced	5,198	1,759	1,577	2,080	1,273	560	657	13,104
Completed	4,304	1,817	1,066	2,255	1,161	618	994	12,215
Purchased	276	1,039	351	644	352	169	2	2,833
Sold	145	121	71	200	93	416	349	1,395
Total as at 30 June 1986	**102,222**	**51,007**	**26,631**	**56,028**	**30,792**	**12,689**	**7,375**	**283,744**
Home Purchase Assistance—								
Loans approved for purchase								
New	—	118	909	97	3	3	10	1,140
Other	888	2,043	2,177	2,174	438	654	52	8,426
Construction	776	427	647	659	350	71	25	2,955

The Bass Strait oil rig, 'Diamond M Epoch', in Hobart for repairs.

Mootsuyker Island off southern Tasmania.

Underground dwelling, Coober Pedy, N.S.W.

Photos—Promotion Australia

Old cottage near Glen Innes, N.S.W.

Terraced houses, Glebe, N.S.W.

A home typical of Queensland.

CANADIAN
STAMP
THEATRE ROYAL
OPEN
THEATRE ROYAL
LESALE & RET
AMERICAN

Photos—Promotion Australia

Theatre Royal, Sydney, 1882.

Rialto Tower and restored buildings, Melbourne.

A bag humpy of Darwin's Chinatown, circa 1911.

Tasman Bridge after restoration.

Federation home, Sydney.

Gordon River Dam, Tasmania.

Ross Bridge, Tasmania.

Photos—Promotion Australia

Sydney Opera House under construction, 1966.

COMMONWEALTH–STATE HOUSING AGREEMENT: DISTRIBUTION OF 1987–88 FEDERAL FUNDS (1986–87 FIGURES IN BRACKETS)
($ million)

State	*Untied*	*Rental Assistance for Pensioners*	*Rental Assistance for Aboriginals*	*Mortgage and Rent Relief*	*Crisis Accommodation Program*	*Local Government and Community Housing Program*	*Total*
N.S.W.	184.439 (182.340)	14.517 (14.282)	12.345 (12.345)	8.817 (8.508)	5.447 (4.933)	4.201 (3.883)	229.766 (226.291)
Vic.	141.004 (140.377)	8.560 (8.509)	3.417 (3.417)	6.623 (6.400)	4.092 (3.711)	3.156 (2.921)	166.852 (165.335)
Qld	77.545 (73.328)	7.396 (7.096)	15.186 (14.109)	4.132 (3.968)	2.553 (2.301)	1.969 (1.811)	108.781 (102.613)
S.A.	57.468 (61.004)	2.614 (2.640)	5.595 (5.595)	2.182 (2.114)	1.349 (1.226)	1.040 (0.965)	70.248 (73.544)
W.A.	49.561 (49.239)	3.051 (3.095)	10.264 (10.047)	2.299 (2.197)	1.420 (1.274)	1.095 (1.003)	67.690 (66.855)
Tas.	23.222 (24.701)	0.839 (0.855)	0.696 (0.696)	0.710 (0.686)	0.439 (0.398)	0.339 (0.313)	26.245 (27.649)
N.T.	16.761 (18.611)	0.523 (0.523)	12.497 (11.791)	0.237 (0.227)	0.200 (0.157)	0.200 (0.104)	30.418 (31.413)
Aust.	**550.000 (549.600)**	**37.500 (37.000)**	**60.000 (58.000)**	**25.000 (24.100)**	**15.500 (14.000)**	**12.000 (11.000)**	**700.000 (693.700)**

Specific purpose programs

In addition to untied assistance used for the provision of home purchase assistance and general public rental housing, the CSHA provides funds for a number of specific purpose programs:

(*a*) *Rental Assistance for Pensioners*. The numbers of pensioner units provided under this program to 30 June 1986 amounted to around 18,000.

(*b*) *Rental Assistance for Aboriginals*. Since 1979–80 the Federal Government has provided separately identified funding to the States for rental housing assistance for Aboriginals through the CSHA. Since 1980, 4,217 dwellings have been provided in the six States and the Northern Territory under this program. This includes the upgrading of existing dwellings.

(*c*) *Mortgage and Rent Relief Scheme*. This is a program for the provision of short term assistance to low-income earners experiencing genuine financial difficulty in meeting their mortgage repayments, rent payments or in gaining access to private rental accommodation.

(*d*) *Crisis Accommodation Program*. A program introduced to assist families, youths, single men and women in crisis situations, as well as the chronically homeless.

Local Government and Community Housing Program

In 1984–85, the Commonwealth introduced the Local Government and Community Housing Program. Grants are provided to the States and the Northern Territory to assist local governments, community groups and other non-government organisations to purchase, construct, lease or upgrade dwellings for low cost rental housing. The main objectives of the program are to attract local government and community expertise and money to supplement CSHA efforts, broaden the choice of low cost rental housing and involve tenants in the management of their dwellings. Decisions on the broad program for funding are made by the Commonwealth and State Housing Ministers based on advice from State Advisory Committees. Under arrangements applicable to the operation of the program, States are responsible for the day-to-day administration. Grants under this program are not required to be matched by the States.

Housing Loans Insurance Corporation

The Housing Loans Insurance Corporation is a government business enterprise which insures lenders (such as building societies, banks, etc.) against loss on housing and building loans.

From November 1965, when the Corporation commenced operations, until the end of June 1986, 760,000 loans to the value of $22,000 million had been insured.

Housing Agreement (Service Personnel)

State housing authorities build and upgrade dwellings for allocation to service personnel under the agreed arrangements with the Commonwealth Government. The arrangements to 30 June 1981 are covered by the Commonwealth-State Housing Agreement. Operations have continued since that time under the same arrangements pending a new agreement.

Dwellings no longer required for service personnel revert to State public housing stock and in 1986–87 some 652 dwellings were returned to the States for use as public rental housing.

Following the 1984 Task Force Review on Housing for Service Personnel, the Government announced on 30 January 1986 that it would establish a Defence Housing Authority, operating as a Statutory Authority and responsible to the Minister for Defence.

In 1986–87, $2.4 million was spent on the provision and upgrading of dwellings.

Defence Service Homes

The *Defence Service Homes Act 1918* assists certain former and serving members of the Defence Force to acquire a home on concessional terms.

The Defence Service Homes Corporation is, subject to the directions of the Minister for Veterans' Affairs, responsible for the administration of the Defence Service Homes Act. Persons eligible under the Act include:

- members of the Australian forces and nursing services enlisted or appointed for, or employed on, active service outside Australia or on a ship of war during World War I and World War II;
- persons who served in the warlike operations in Korea or Malaya or on operational service in South East Asia;
- members of the Defence Force who serve on continuous full-time service and national service men whose periods of service ended not earlier than 7 December 1972 and who meet certain prescribed conditions.

The categories of eligible persons also include the widows and, in some circumstances, the widowed mothers of eligible persons, and persons domiciled in Australia and employed in certain sea-going service during World War I and World War II.

During 1984–85 the following loan conditions applied:

Maximum loan:	$25,000
Interest rates:	3.75 per cent per annum on the first $12,000 7.25 per cent per annum on any excess over $12,000 up to $15,000 10.00 per cent per annum on an amount in excess of $15,000
Repayment period:	The maximum repayment period permitted by the Act is 45 years or, in the case of the widow or widowed mother of an eligible person, 50 years. Normally the repayment period is limited to 32 years.

On 14 May 1985 the Treasurer announced that persons joining the Defence Force after that date would not qualify for benefits under the Defence Service Homes Scheme; instead, those persons would be eligible for home ownership assistance under a scheme to be developed.

The Treasurer's statement of 14 May 1985 also announced the Government's intention to arrange for private financial institutions to provide loans that would include a substantial interest concession and to administer existing loans. Consistent with this decision institutions were invited, through newspaper advertisements on 12 December 1986, to express interest by 11 March 1987 in providing new loans and managing the existing portfolio of mortgages and the insurance operations. The evaluation of the responses had not been completed at 30 June 1987.

Operations under the Defence Service Homes Scheme

Since the inception of the Defence Service Homes Scheme in 1919, 426,176 eligible persons have been assisted under the Act. The figures shown include persons originally assisted under housing agreements with the States, and taken over in accordance with those agreements.

The following tables give details of the operations under the Defence Service Homes Act for the years 1981–82 to 1986–87. The figures shown include operations in the Australian Capital Territory, the Northern Territory and Norfolk Island.

DEFENCE SERVICE HOMES ACT: NUMBER OF LOANS GRANTED

Year	*Construction of homes*	*Purchase of new homes*	*Purchase of previously occupied homes*	*Enlargement of existing homes*	*Total*
1981–82	2,694	570	3,818	203	7,285
1982–83	2,345	419	3,568	225	6,557
1983–84	1,998	254	3,058	220	5,530
1984–85	2,201	266	3,226	216	5,909
1985–86	1,926	275	2,837	229	5,267
1986–87	1,858	284	2,833	227	5,202

DEFENCE SERVICE HOMES ACT: STATE SUMMARY OF OPERATIONS

Year	*N.S.W.(a)*	*Vic.*	*Qld(b)*	*S.A.(c)*	*W.A.*	*Tas.*	*A.C.T.*	*Aust.*
NUMBER OF LOANS GRANTED								
1981–82	1,569	1,563	2,031	709	806	198	409	7,285
1982–83	1,576	1,484	1,447	687	808	185	370	6,557
1983–84	1,222	1,264	1,215	580	770	177	302	5,530
1984–85	1,372	1,266	1,249	580	944	228	270	5,909
1985–86	1,344	1,032	1,192	474	830	155	240	5,267
1986–87	1,357	945	1,299	454	740	124	283	5,202
CAPITAL EXPENDITURE ($'000)								
1981–82	34,350	34,710	44,690	15,318	18,537	4,362	9,723	161,690
1982–83	36,677	33,939	34,416	15,500	18,877	4,001	9,067	152,477
1983–84	28,218	29,133	28,321	13,213	18,487	4,078	7,336	128,786
1984–85	31,841	29,169	29,860	13,423	21,821	4,967	6,511	137,562
1985–86	31,801	24,998	28,598	11,855	19,351	3,498	5,871	125,972
1986–87	32,081	22,353	31,652	10,968	17,029	2,880	6,489	123,452
LOAN REPAYMENTS ($'000)								
1981–82	29,825	22,278	14,915	7,933	8,980	2,013	(*d*)	85,944
1982–83	27,951	22,084	13,191	8,032	8,017	1,772	(*d*)	81,047
1983–84	33,837	25,856	16,433	9,936	10,322	2,575	(*d*)	98,959
1984–85	37,247	29,721	18,224	11,144	12,679	3,202	(*d*)	112,217
1985–86	30,336	24,800	14,906	8,563	9,910	2,670	(*d*)	91,185
1986–87	30,315	25,723	14,305	8,334	11,323	2,536	(*d*)	92,536
NUMBER OF LOAN ACCOUNTS AT 30 JUNE								
1982	53,332	45,498	25,254	14,871	16,235	3,876	3,415	162,481
1983	52,166	44,473	25,476	14,649	16,246	3,856	(*d*)	160,649
1984	50,296	42,738	25,198	14,181	15,990	3,761	(*d*)	155,982
1985	48,283	40,943	24,873	13,709	15,660	3,694	(*d*)	150,985
1986	46,412	39,259	24,710	13,315	15,521	3,607	3,796	146,620
1987	44,777	37,530	24,700	12,990	15,071	3,484	3,860	142,412

(*a*) Includes Norfolk Island (*b*) Includes Papua New Guinea (*c*) Includes Northern Territory (*d*) Included in New South Wales.

State housing authorities

The following paragraphs describe briefly the organisation of the various State housing authorities and their activities in the fields of home construction and provision of homes on a rental basis.

New South Wales—Department of Housing

The Department came into being with the enactment of the *Housing Act 1985* on 1 January 1986, which enabled the amalgamation of the Housing and Land Commissions of New South Wales and various housing related divisions of other departments. The Department's structure reflects a more objective and integrated approach to the provision of secure, appropriate and affordable housing to all sections of the community with housing needs.

Advances from the Commonwealth Government have provided most of the Department's capital funds and by 30 June 1986 had aggregated $1,318,764,000 of which $194,984,000 had been repaid. Other net funds of the Department at 30 June 1986 comprised: repayable advances from the State, $357,800,000; public loans raised by the Department, $281,478,000; grants from the Commonwealth Government, $758,646,000; grants from the State, $81,368,000 (including $8,668,000 from Consolidated Revenue and $72,700,000 mainly from the proceeds of poker machine taxes); and accumulated surplus, $258,273,000. In addition, the Department owed $68,433,000 to creditors, mainly for purchase of land and work-in-progress. These funds were represented by fixed assets, $2,841,839,000 (including $115,291,000 owed by purchasers of homes); and current assets, $106,091,000. In 1985–86, the Department's income was $151,360,000 (including rent, $118,414,000 and interest, $18,097,000); expenditure was $146,870,000 (interest, $52,704,000).

The permanent dwellings provided by the Department have been erected under the Commonwealth–State Housing Agreements or from State loans and grants. In 1985–86, 4,272 houses and flats were completed for the Department by contracted private builders.

Upon request by other State departments, the Department will erect houses for employees of those departments, the departments providing the necessary lands and funds. In addition, the Department erects (with State funds) dwellings for employees of industries connected with decentralisation and development. Specially designed units are erected by the Department to provide dwellings for elderly persons at rentals within their means. The rents of these units, as at 30 June 1986, were approximately $18.38 a week for elderly single persons and $30.65 a week for elderly couples. At 30 June 1986, 13,776 units had been completed.

Victoria—Ministry of Housing

The various State housing authorities were consolidated under the control of the Ministry of Housing early in 1983. These authorities included the Housing Commission, the Government Employee Housing Authority and the Co-operative Housing Registry.

The Ministry's key objectives are to:

- facilitate the continuing access of all Victorians to affordable, adequate and appropriate housing;
- deliver housing assistance programs in an effective, efficient and equitable manner.

Thus, the Ministry is not only involved in the provision of public rental accommodation but also in the provision of assistance to private tenants and existing and potential homeowners. The Ministry also co-operates with community groups in the provision of emergency housing, and programs to assist the homeless are currently under development.

During 1986–87 a total of 3,179 public rental units were built or purchased, using funds provided under the Commonwealth–State Housing Agreement, State funds and Ministry funds. The Ministry's public rental stock was 54,000 as at 30 June 1987 of which 64 per cent were located in the metropolitan area. As at 30 June 1987 there was a waiting list of 30,076 households requesting public rental assistance, as well as 4,404 households wishing to transfer from one Ministry unit to another. Tenants on reduced rents (rebates) totalled 40,029 at this date, representing 78 per cent of all tenants.

The Ministry also provides assistance to households renting in the private sector. Under the Bond and Relocation Scheme, the Ministry provides financial assistance to individuals or households in the private rental market by making funds available for security deposits (bonds), rent-in-advance and removal expenses. Individual single applicants may receive a maximum loan of $500 and families or groups may receive up to $700. During 1986–87 some 12,702 households received assistance under this scheme, at an average level of assistance of $543 per household.

Queensland—Queensland Housing Commission

The Queensland Housing Commission was established in 1945 to assist in meeting the housing shortage. In addition, the Commission was empowered to build houses itself, either for sale or for rental.

During 1986–87 the Commission provided 5,507 dwelling units, bringing the total number under all schemes since the revival of housing construction in 1944–45 to 89,009. Of this number, 57,381 houses, or 64.5 per cent, were for home ownership, and 31,628, or 35.5 per cent, were for rental.

In the field of rental housing, the Commission administers, and acts as the constructing authority under, the Commonwealth–State Housing Agreements and States Grants (Housing) legislation. Operating under the provisions of the *State Housing Act 1945–1986*, the Commission, through its scheme of mortgage finance, makes advances for the construction of dwellings to eligible persons who own a suitable building site or to purchase a house and land package. The number of dwellings completed during 1986–87 under this scheme amounted to 3,618, making a total of 55,690 completions since the inception of the scheme. The Commission also has power to make advances, secured by mortgage, to firms for housing of employees. The Commission has power to sell houses under contract of sale conditions. Contract of sale agreements were made to purchase 54 of the Commission's houses during 1986–87.

South Australia—South Australian Housing Trust

The South Australian Housing Trust was established under the *South Australian Housing Trust Act, 1936*. Under the *Housing Improvement Act, 1940*, the Trust became the housing authority to administer the Act and the Trust's powers were extended. It is also the housing authority for South Australia under the *Housing Assistance Act 1984*.

The primary role of the Trust is to provide housing for those in need, and within their capacity to pay. The Trust aims to provide housing which is appropriate for the householders' needs, is of an acceptable and modern standard and is integrated within the surrounding environment.

The Trust makes housing available to those in need, by the construction, purchase or leasing of property which is let to tenants at rents related to cost, with a rent rebate scheme for those with special needs; by the sale of housing, mainly to sitting tenants.

The Trust also provides assistance to tenants renting privately through:

- the administration of the Rent Relief Scheme;
- its management responsibility for the Emergency Housing Office;
- exercising its responsibilities under the Housing Improvements Act.

It also assists home owners in financial crisis through the Mortgage Relief Scheme.

The Trust is actively involved in providing housing in partnership with other organisations. One example of this is the Housing Co-operatives Scheme under which the Trust subsidises private rental co-operatives. Others include joint ventures with various private, local government and community organisations where resources are pooled, in order to meet local housing needs; and community tenancies where the Trust provides residential accommodation for community purposes including women's shelters and youth housing.

The Trust has a separate responsibility to government to act as the State's industrial property authority, to provide industrial premises for approved additions to or extensions of industrial facilities within the State.

A total of 108,132 dwellings have been built, purchased or leased by the Trust since 1936.

Western Australia—State Housing Commission of Western Australia

The activities of the State Housing Commission, trading as Homeswest, extend throughout the State. Under the State Housing Act, the Commonwealth–State Housing Agreements prior to 30 June 1971, the *States Grants (Housing) Act 1978*, the 1978 Housing Agreement, the 1981 Housing Agreement, and the 1984 Housing Agreement, the Commission constructs a variety of dwelling types for its rental and purchase programs. In addition, it constructs housing for other government departments (both Commonwealth and State Government, and semi- and local government authorities) and constructs and maintains houses for the Government Employees' Housing Authority.

At 30 June 1987, the Commission had provided under all schemes since 30 June 1944 a total of 78,173 units of accommodation throughout the State (including 12,046 units completed under the *Defence Services Homes Act 1918*).

During the twelve months ended 30 June 1987, 1,999 units of accommodation were provided: 1,164 in the metropolitan area, 443 in country areas and 392 north of the 26th parallel.

Building societies are a major source of housing finance in Western Australia. At 30 June 1987, it was estimated that the assets of permanent and terminating societies were about $1,880 million. Currently, 7 permanent and 177 terminating societies are operating. Under the 1984 Housing Agreement with the Commonwealth, the State is required to allocate a proportion of the funds the State receives under the Agreement to the Home Purchase Assistance Account. Advances are made from the account to terminating building societies which in turn make loans available to eligible applicants, being those persons unable to obtain mortgage finance assistance in the open market or from other sources.

Under the *Housing Loans Guarantee Act, 1957–1986*, the guarantees provided to financial institutions enable loans to be made by lending institutions with full security. The Act enables building societies and other approved bodies to make high ratio advances to families of low and moderate means without additional charge. The interest rate charged to the borrower is in line with the Commonwealth Bank mortgage rate. Loans may be made for up to 95 per cent of the value of the house and land. The maximum loan permitted in respect of the metropolitan region south of the 26th parallel is $50,000. For a new house situated in the country south of the 26th parallel, the maximum loan is $52,500; for the Kalgoorlie and Esperance region, $57,000; in the North West and Eastern Division, $86,000; and in the Kimberley region, $88,000.

Tasmania—Tasmanian Housing Department

The Housing Department is responsible for administering the portion of the *Homes Act 1935* relating to the acquisition and development of land for housing purposes and the erection of homes for rental and sale to those deemed in need of assistance.

During 1986–87, dwelling completions numbered 568. The total number of dwellings constructed to 30 June 1987 was 23,850, of which 7,958 have been paid for in full, sold or demolished. The number of properties purchased numbered 1,424, making a total dwelling stock of 17,316. Of these 12,883 are detached or semi-detached, 2,335 are elderly persons' units, 424 are multi-unit flats, 1,645 are villa units and 29 are moveable units.

Dwellings are allotted on a rental basis, however tenants are able to achieve home ownership through a purchase contract. The weekly rental of a house was between $45.00 and $79.00 at 30 June 1987. Approximately 71 per cent of tenants are in receipt of a rental rebate.

Housing schemes in Australian Territories

Northern Territory

In 1946 control of all government-owned residences in the Territory (excluding those belonging to the Defence Services, Commonwealth Railways or attached to post offices) was vested in the Administration. The Northern Territory Housing Commission was established in 1959 and currently operates under authority of the *Housing Act 1982*. In 1968, an amendment to the Housing Ordinance gave the Commission power to build dwellings for approved industries and government departments and authorities. The Commission became autonomous on 1 October 1969.

Australian Capital Territory

The Commonwealth Government provides houses, flats and aged persons' units for rental to persons on low incomes who live or are employed in the Australian Capital Territory. At 30 June 1987, the then Department of Territories controlled 7,522 houses and 3,709 flats (including aged persons' units) for rental purposes. Government rental houses are currently not available for purchase by tenants.

Summary of rental activities of government authorities

GOVERNMENT HOUSING AUTHORITIES: REVENUE FROM RENTALS
($'000)

Year	*N.S.W.*	*Vic.(a)*	*Qld*	*S.A.*	*W.A.(b)*	*Tas.*	*N.T.(b)*	*A.C.T.*	*Aust.*
1981–82	162,323	r 65,514	51,112	60,403	36,648	21,557	17,915	22,896	r 438,368
1982–83	188,317	r 74,343	55,865	70,243	40,475	25,149	18,712	37,780	r 510,884
1983–84	200,371	r 86,299	59,675	79,097	44,108	28,178	19,899	35,794	r 553,421
1984–85	218,820	96,175	66,946	90,643	45,945	30,386	22,727	28,090	599,732
1985–86	118,414	109,103	72,036	98,001	49,292	36,033	26,454	33,764	543,097
1986–87	258,200	117,958	78,898	113,409	53,920	40,776	30,074	38,548	731,783

(*a*) Prior to 1983–84 figures relate to Housing Commission only and thereafter to the Ministry of Housing. (*b*) Figures relate to Housing Commission only.

GOVERNMENT HOUSING AUTHORITIES: NUMBER OF TENANTS PAYING RENT

Year	*N.S.W.*	*Vic.(a)*	*Qld*	*S.A.*	*W.A(b)*	*Tas.(c)*	*N.T.(c)*	*A.C.T.(c)*	*Aust.*
1981–82	95,237	43,900	24,253	46,263	27,707	10,412	6,882	9,495	264,149
1982–83	97,286	45,806	25,421	48,466	28,656	10,996	7,167	9,638	273,436
1983–84	99,979	49,026	26,890	50,914	28,934	11,736	r7,497	9,849	r284,825
1984–85	100,098	51,642	28,393	53,281	30,178	12,437	r7,878	10,005	r293,912
1985–86	104,410	54,665	29,793	56,028	31,484	12,633	8,623	10,574	308,210
1986–87	133,826	57,300	31,628	58,884	32,270	12,911	8,830	11,028	346,677

(*a*) Prior to 1983–84 figures relate to Housing Commission only and thereafter to Ministry of Housing. (*b*) Figures relate to Housing Commission only. (*c*) Number of occupied dwellings at 30 June.

Advances to home purchasers

Many prospective home purchasers wish to borrow for the purpose of constructing or purchasing their own homes. Usually the loan is covered by way of mortgage of the home to be constructed or bought. Such loans are provided from a number of private sources and from agencies owned or guaranteed by the Commonwealth or State Governments. The information in this section concerns the direct loans made to home purchasers by the more important institutional lenders. Loans to institutions which in turn lend moneys to home purchasers and loans to contract builders, etc., are excluded as far as possible. The loans may be for the construction of new dwellings, the purchase of existing dwellings, for additions, renovations, etc., as first or subsequent mortgages, overdrafts and so on. While figures of all loans to home purchasers are not available, the institutions mentioned account for a significant proportion of total loans. Details of the terms and conditions of lending are given, together with available information on the number and value of loans made.

State and Territory authorities and agencies

New South Wales—State Bank of New South Wales—Sale of Homes Agency

The State Bank of New South Wales, by arrangement with the New South Wales Government, administers funds provided in respect of agency schemes under which finance is made available to individuals for erection or purchase of homes and for other approved purposes associated with homes.

Prior to 1976, the Sale of Homes Agency undertook arrangement for the sale on terms of houses erected by the Housing Commission of New South Wales and houses sold on terms under the 1956 and subsequent Commonwealth–State Housing Agreements and Arrangements. The Agency has continued to administer the purchase accounts. For further details on this responsibility of the Bank *see Year Book* No. 66.

The Housing Society Agency administers advances made to co-operative housing societies and the State Bank (as the approved government lending institution of the State) from funds allocated to the State under Commonwealth–State Housing Agreements and Arrangements. Borrowers pay interest on the advances made prior to 1 July 1985 at rates ranging from 5 per cent per annum to rates which increase annually until they are 1 per cent per annum below the then current Commonwealth Savings Bank rate for housing loans. Changes brought about by the *Housing Assistance Act 1984* require borrowers to pay interest at the rate of 11.25 per cent per annum on advances made from 1 July 1985, but for low income earners a rebate of interest is allowed. Repayments by borrowers range from 20 to 30 per cent of income.

Particulars of advances by the Agency during the last six years appear in the following table.

AGENCY ADVANCES
($'000)

Year ended 30 June	*Advances during year*	*Total advances to end of year*	*Principal repaid during year*	*Advances outstanding at end of year*
1981	52,640	668,325	34,733	373,918
1982	50,615	718,940	27,702	396,865
1983	37,565	756,505	27,976	406,500
1984	78,265	834,770	40,487	444,423
1985	63,027	897,797	45,781	461,710
1986	72,146	969,943	40,316	490,794

Stamp Duty Deferred Payment Scheme

In 1976 the State Government introduced a scheme by which first home buyers may be eligible for a deferment of the amount of stamp duty payable on their first home. The Stamp Duties Office determines, on behalf of the Treasury, the eligibility of applicants and properties and, if acceptable, approves of an advance being made for payment of stamp duty in accordance with the scheme. Applicants repay the advance to the State Bank over a period of five years by equal annual instalments. The advances are free of interest provided instalments are paid by the due date. To 30 June 1986, 182,758 applicants had taken advantage of the Deferred Payment Scheme to the extent of $154.2 million. Balances outstanding as at 30 June 1986 totalled $64.9 million in respect of 94,698 accounts.

State Second Mortgage Loan Scheme

On 1 July 1981 the New South Wales Government introduced the State Second Mortgage Loan Scheme to provide second mortgages to assist eligible low to moderate income earning families to acquire their home. The interest rate charged is 12 per cent per annum or the notional rate payable on the first mortgage, whichever is the higher, and remains fixed for the term of the loan. The maximum loan is $15,000 and loans are repayable over 10 years. The scheme is financed from funds made available by various government instrumentalities and is administered by the State Bank of New South Wales. From the inception of the scheme to 30 June 1986, 7,294 loans for $69.2 million were approved.

State Bank of New South Wales—other loans

The State Bank of New South Wales provides assistance to individuals for the erection or purchase of homes and for other approved purposes associated with homes. Advances are based on the bank's official valuation of the dwelling. The rate of interest on new long term loans for housing purposes as at September 1987 was 15.5 per cent per annum.

Victoria—Ministry of Housing

Home purchase loans granted totalled 2,255 over 1986–87, of which 572 were provided through the co-operative housing societies. The loans were provided through several schemes: Capital Indexed Loans (CAPIL) — 1,285 loans; Indexed Repayment Loans — 908 loans and Home Ownership for the Over Fifties — 62 loans. Expenditure under these three schemes during the financial year was $70.2 million, $52.0 million and $2.8 million respectively.

CAPIL is the Ministry's standard lending instrument. Repayments are fixed at 25 per cent of an eligible household's income with the interest rate tied to the annual rate of inflation to provide a real rate of return of 3 per cent per annum. In addition to standard CAPIL funding, the Real Estate Agents' Board has provided $7 million in funds targetted for people aged 50 and over. The new scheme, called Home Ownership for the Over Fifties (HOOF), was launched in June 1986. The third loan type (Indexed Repayment Loan) is a new joint venture between the Ministry and four leading banks. The scheme provides for a two part loan arrangement, with a first mortgage being held by the banks and the second mortgage with the Ministry. The first mortgage is over a fixed 25 year term with a variable interest rate set by the bank. The borrower pays the Ministry repayments set at 25 per cent of income and the Ministry pays the full instalment to the bank. The shortfall on the repayments made to the Ministry are secured under the second mortgage with an interest rate geared to the Consumer Price Index. When the first mortgage is paid out, repayments continue until the Ministry's second mortgage is discharged.

Queensland—Queensland Housing Commission

Loans from the Commonwealth and State Governments are the major source of capital funds for the Commission. Under the *State Housing Act 1945–86*, an eligible person who is the owner of a suitable building site may obtain an advance, secured by mortgage on the land, from the Housing Commission for the erection of a dwelling. The Housing Commission also provides mortgage finance for the purchase of homes already built or to be built by private contractors. The Commission has three home ownership schemes. The first, the Interest Subsidy Scheme, provides a non-repayable subsidy to borrowers who cannot afford commercial rates of interest. The Commercial Scheme is for those on higher incomes who cannot obtain finance elsewhere, and the Second Loan Scheme, introduced in 1984, assists borrowers to bridge the deposit gap. To be eligible, a borrower must qualify for the Interest Subsidy Scheme.

South Australia—South Australia Housing Trust

The Trust also administers the Rental Purchase Scheme in conjunction with the State Bank. This scheme supersedes the Low Deposit Purchase Scheme in assisting low income people in purchasing a home through a nominal deposit and low interest loan.

In September 1986, the Trust initiated the HOME Trust Shared Ownership Scheme whereby tenants can purchase their home in affordable stages commencing with a 25 per cent share.

Western Australia—State Housing Commission of Western Australia

In December 1984 the Commission introduced new loan initiatives to assist applicants with home ownership. These schemes are known as First Mortgage, Flexible Deposit, Shared Equity and Senior Citizens Loan Schemes. The maximum interest rate is maintained in relationship with the Commonwealth Bank interest mortgage rate and the repayment of the loan is on an income geared basis with an applicant not being expected to pay more than 25 per cent of assessed family income in repayments. The maximum repayment period is 30 years.

Under the schemes, the applicants are able to select an established home or build a new home of their choice. The maximum income limits vary with the location. A family with one child can have a maximum weekly income of $384.30 in the metropolitan area, $497.30 in remote areas and $542.50 in the Kimberley region. These limits increase by $10 for each additional child after the first.

Under the First Mortgage, Flexible Deposit and Shared Equity Schemes, the maximum value of house and land in the metropolitan area is $41,500 if buying an established home or $43,000 if building a new home. In non-metropolitan areas, the maximum value varies from $43,500 for an established house in country areas to $80,000 if building a new home in the Kimberley region. Minimum deposit required is usually 5 per cent of valuation, although with the Flexible Deposit Scheme as little as $500 can be paid as the deposit on a home.

The Shared Equity Scheme was designed to help people on very low incomes into home ownership. Homeswest purchases the home on behalf of the applicant and funds the applicant to an equity share of not less than 60 per cent of the home value. Normally 5 per cent of the loan sought is required for the deposit but this can be reduced to as little as $500. All maintenance, insurance and rates are shared in accordance with the applicants' equity share.

Assistance through Terminating Building Societies is available to eligible applicants from the Loans Priority List under first mortgage conditions. Funds are not available for second mortgages. The interest rate on advances is up to 13.5 per cent depending on family income and the maximum term is for 30 years. In the metropolitan area, the maximum income limit is $384.30 per week plus an extra $5 per week for each dependent child after the first. The value of house and land cannot exceed $43,500 and a 5 to 10 per cent deposit is required. In other areas around the State, maximum income limits vary between $384.30 in country areas and $542.50 in the Kimberley region and the maximum value of house and land varies from $47,000 in country areas to $84,000 in the Kimberley region.

See Savings Banks, page 243 of *Year Book* No. 61, for activities of the Savings Bank Division of the Rural and Industries Bank of Western Australia.

Tasmania—Tasmanian Housing Department

The home purchase scheme, to enable low income earners to achieve home ownership, is based on a purchase contract with repayments being fixed at 25 per cent of the purchaser's income; interest payments are deferred where the tenant's income is insufficient to meet all the interest repayments.

During 1986–87, 192 homes were sold under purchase contract.

Tasmanian Development Authority

The Authority is responsible for the administration of funds made under the Home Purchase Assistance section of the *Housing Assistance Act 1984*. The State has also provided State loan funds for lending under the Homes Act.

The primary principle of the *Housing Assistance Act 1984* is to ensure that every person in Australia has access to adequate and appropriate housing at a price within his or her capacity to pay.

The Authority has introduced a Deferred Interest Subsidy Scheme, whereby low income earners can borrow sufficient amounts to enable them to purchase a reasonable dwelling. The current rate of interest is 13.5 per cent with monthly repayments based on 25 per cent of joint gross monthly income. When the repayment is not sufficient to meet the interest charged on the loan, the balance is deferred and repaid in the later years of the loan. There is no interest charged on the deferred proportion of the loan.

The Authority has recently introduced a new Home Ownership Building Industry Scheme (HOBIS) whereby private builders were requested to tender for the construction of 104 homes throughout the State for low to moderate income earners who could not otherwise afford to purchase a new home. As an incentive, loans were offered at an initial interest rate of 10 per cent, increasing by 1 per cent per annum until the normal rate for housing loans with the Authority is reached.

TASMANIAN DEVELOPMENT AUTHORITY, ADVANCES FOR HOUSING (*a*)

Particulars	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*	*1986–87*
Advances approved—						
Number	354	450	624	537	815	624
Value ($'000)	9,448	12,665	18,030	17,437	28,390	24,790
Advances outstanding at 30 June ($'000)	65,056	71,020	83,081	90,338	106,000	114,606

(*a*) Excludes advances to co-operative housing societies.

Northern Territory—Loans Scheme

The Northern Territory Government Home Loan Scheme, introduced on 1 October 1979, was replaced on 1 September 1984 by the *Northern Territory Home Purchase Assistance Scheme*. This scheme is based on the principles set out in the Commonwealth–State Housing Agreement.

The scheme is based on a maximum loan of $50,000 to lower income groups. As the gross weekly income of the highest earner increases, the amount of the Commission loan decreases. There is a requirement that a prescribed amount be borrowed from a private lending institution for the higher income group.

Repayments on the loan are based on 20 per cent of gross family income and reviewed annually. Where the repayment is insufficient to cover interest due, the unpaid amount is allowed to accumulate free of additional charges.

The interest rate currently charged is 13.5 per cent and the Commonwealth Savings Bank Home Loan rate will be an indicator for future interest rates. The maximum term of the loan is 45 years.

To be eligible to apply, applicants must not own a home elsewhere in Australia, have resided in the Territory for the six months prior to application and property value must not exceed $100,000. Loans can be on a first or second mortgage basis.

Northern Territory—Sales Scheme

A scheme exists to allow eligible tenants of the Northern Territory Housing Commission dwellings to purchase dwellings under the General Public Sales Scheme. Sales are on a cash basis only to approved tenants.

Australian Capital Territory

The Commissioner for Housing operates an income-geared loan scheme to assist people who are generally unable to afford finance in the private market. Loans to a maximum of $60,000 over a maximum term of 30 years are available for the purchase or erection of dwellings in the Australian Capital Territory. The exact amount of loan granted and term of the loan are determined by the applicants' level of income and assets and the value of the property to be purchased. To qualify for a loan an applicant must:

- be a permanent resident of Australia and have lived or worked in the Australian Capital Territory for at least six months prior to loan approval;
- have attained the age of 18 years;
- not exceeded the applicable income limit which is reviewed quarterly;
- be unable to obtain sufficient housing finance from private sources;
- not have any interest whatsoever in real property located in the Australian Capital Territory or Queanbeyan other than the dwelling or the land upon which it is proposed to erect the dwelling;
- undertake to dispose of any other real property within a period of six months after assistance is granted under this scheme;
- not previously have received government financial assistance in the form of a loan for the purchase or construction of a dwelling in the Australian Capital Territory or Queanbeyan;
- demonstrate a capacity to afford the initial and subsequent commitments for purchase of a property;

The loan must not exceed the determined value limit of the dwelling.

Applicants who do not satisfy one or more of the above conditions may still be granted assistance if, in the opinion of the Commissioner for Housing, the applicant is in need of assistance and the objective of the scheme would be satisfied by providing that assistance. Interest rates for new loans are aligned with the Commonwealth Savings Bank new home loans rate. Instalment repayments are geared to the applicant committing 25 per cent of income to total mortgage payments and instalment subsidies are repaid over the term of the loan or upon discharge. At 30 June 1987, 8,573 properties were under mortgage to the Commissioner for Housing. The Commissioner also administers 6,046 Commonwealth of Australia mortgages.

CONSTRUCTION

Building

Building activity is a significant indicator of the level of economic activity. In addition, the level of building activity and the types of buildings being constructed affect the Australian physical and social environment. Building approvals statistics give an indication of the potential future level of investment of private individuals, companies and government agencies in approved building construction. Building activity statistics show the level of actual building construction activity in terms of the level of commencements and completions, building jobs under construction and the value of work done and yet to be done on building jobs.

From July 1985, there was a change in terminology used by the ABS in presenting building statistics. The terms 'residential buildings' and 'non-residential building' replaced 'dwellings' and 'other building' respectively and 'other residential buildings' replaced 'other dwellings'. It should be noted that these were only changes in terminology and do not affect the classification of the various types of buildings or the statistics. The concept of a 'dwelling unit' remained unchanged.

The building statistical collections cover all new residential building of any value, new non-residential building jobs valued at $10,000 and over, and alterations and additions (to both residential and non-residential building) valued at $10,000 and over. From 1966–67 to 1972–73, alterations and additions of $10,000 and over were included with new residential building and new non-residential building. From 1973–74, alterations and additions (of $10,000 and over) to new residential building are shown separately, but for non-residential building, new work and alterations and additions continue to be shown combined.

From the September quarter 1980 a new Building Activity Survey replaced the previous quarterly Building Operations Census. The major features of the new survey are as follows:

- replacement of the previous complete enumeration of private sector jobs involving new house construction or alterations and additions valued at $10,000 or more to houses by a sample survey;
- a complete enumeration of jobs involving construction of new residential buildings other than private sector houses, all alterations and additions to residential buildings (other than private sector houses) with an approval value of $10,000 or more, and all non-residential building jobs with an approval value of $30,000 or more.

From the September quarter 1981 two additional changes were introduced:

- a one-month-lagged framework of approvals is now used as the basis for selection of both house and non-house building jobs (previously only private sector house jobs were selected from a one-month-lagged approvals framework);
- in general, a building job is now considered to have commenced, for the purposes of the statistical collection, only when the value of work done on that job as reported by the builder is equal to or greater than a pre-determined (threshold) value.

Number of new houses

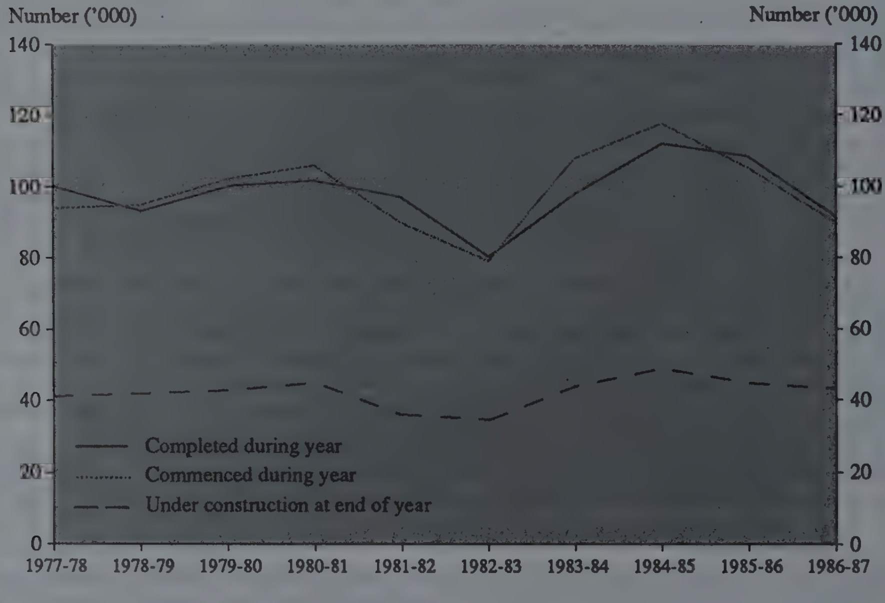
The following table provides a summary of the number of new houses approved, commenced, under construction and completed by type of ownership in each State and Territory for the year 1986–87.

NUMBER OF NEW HOUSES, 1986–87
('000)

	N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Private Sector—									
Approved	22.0	26.6	16.9	5.8	12.9	2.3	0.4	1.5	88.4
Commenced	20.6	26.0	16.2	5.3	11.7	2.2	0.4	1.6	84.0
Under construction(*a*)	12.0	15.3	4.1	2.1	4.5	1.6	0.3	0.6	40.4
Completed	20.6	26.1	16.7	5.0	11.6	2.1	0.4	2.1	84.6
Public Sector—									
Approved	0.9	1.7	0.5	0.9	0.5	0.3	0.5	0.1	5.4
Commenced	1.0	1.7	0.5	1.1	0.5	0.3	0.4	0.1	5.7
Under construction(*a*)	0.6	0.9	0.1	0.4	0.1	0.1	0.3	—	2.7
Completed	1.3	1.6	0.7	1.3	0.7	0.3	0.5	0.4	6.8
Total—									
Approved	22.9	28.3	17.4	6.7	13.4	2.6	0.9	1.6	93.8
Commenced	21.6	27.7	16.7	6.5	12.2	2.5	0.8	1.7	89.7
Under construction(*a*)	12.6	16.2	4.2	2.5	4.7	1.8	0.6	0.6	43.1
Completed	21.9	27.7	17.4	6.3	12.3	2.4	0.9	2.5	91.5

(*a*) At end of period

NEW HOUSES, AUSTRALIA



Note: Break in series from 1980-81 and 1981-82.

Number of new houses approved, by material of outer walls

The use of certain materials for outer walls is dictated by such factors as cost, durability, appearance and climatic conditions. Changes in the materials used over time indicate changes in the characteristics of the housing stock.

The following table shows the number of new houses approved in each State and Territory during the year 1986–87, classified according to the material of their outer walls.

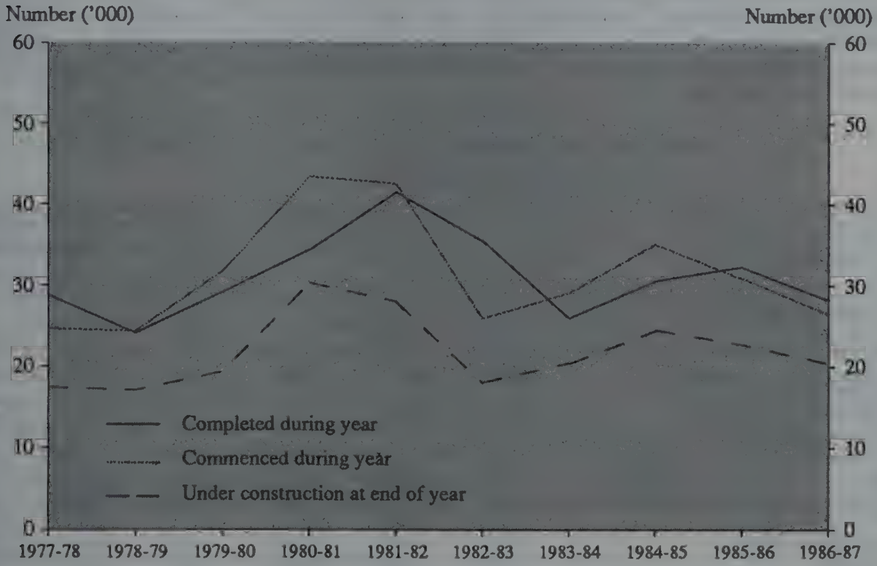
NUMBER OF NEW HOUSES APPROVED BY MATERIAL OF OUTER WALLS, 1986–87

('000)

Material of outer wall	*N.S.W.*	*Vic*	*Qld.*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Double brick(*a*)	2.5	0.5	1.3	0.7	11.6	0.2	0.1	—	17.0
Brick veneer	17.4	18.8	12.8	4.2	0.8	2.0	0.5	1.5	57.9
Timber	1.4	2.3	1.5	0.1	0.2	0.3	—	—	5.9
Fibre cement	1.3	1.0	1.5	0.9	0.6	0.1	—	—	5.5
Other	0.3	0.5	0.4	—	0.1	0.1	0.1	—	1.6
Not stated	—	5.2	—	0.7	—	—	—	0.1	6.0
Total	**22.9**	**28.3**	**17.4**	**6.7**	**13.4**	**2.6**	**0.9**	**1.6**	**93.8**

(*a*) Includes houses constructed with outer walls of stone or concrete.

DWELLING UNITS IN NEW OTHER RESIDENTIAL BUILDING, AUSTRALIA



Note: Break in series from 1980-81 and 1981-82.

Number of dwelling units in new other residential building

The level of other residential building construction is highly variable and does not follow the regular pattern experienced in house construction. This can be explained partly by the generally larger size of other residential building construction jobs and also by the extent of speculative building of private flats, home units and similar other residential building projects. Although construction of government-owned other residential buildings is substantial, the proportion of government-owned other residential buildings to total other residential buildings constructed is smaller than that of government-owned houses to total houses.

The following table shows the number of new dwelling units in other residential building approved, commenced, under construction and completed by type of ownership in each State and Territory for the year 1986–87.

NUMBER OF DWELLING UNITS IN NEW OTHER RESIDENTIAL BUILDING, 1986–87

('000)

	N.S.W.	*Vic.*	*Qld.*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Private Sector—									
Approved	5.8	4.5	4.2	1.3	3.1	0.8	0.3	0.4	20.2
Commenced	5.8	4.4	3.6	1.2	2.9	0.7	0.3	0.5	19.2
Under construction(*a*)	5.5	3.6	2.1	0.8	1.5	0.3	0.1	0.4	14.3
Completed	6.3	5.4	3.1	1.8	3.0	0.7	0.3	0.8	21.5
Public Sector—									
Approved	3.1	0.3	0.9	1.2	0.5	0.2	0.2	0.4	6.7
Commenced	3.3	0.5	0.7	1.3	0.5	0.3	0.3	0.4	7.2
Under construction(*a*)	3.8	0.4	0.3	0.7	0.2	0.2	0.2	0.4	6.1
Completed	2.5	0.6	1.0	1.4	0.6	0.3	0.2	0.2	6.7
Total—									
Approved	8.9	4.8	5.1	2.4	3.6	1.0	0.5	0.7	26.9
Commenced	9.1	4.8	4.3	2.5	3.4	1.0	0.5	0.9	26.4
Under construction(*a*)	9.3	3.9	2.4	1.4	1.7	0.5	0.3	0.8	20.4
Completed	8.8	6.0	4.2	3.2	3.6	1.0	0.5	1.0	28.2

(*a*) At end of period.

Value of buildings

The following table shows the value of all buildings approved, commenced, under construction, completed, work done and work yet to be done in Australia for the year 1986–87, according to the class of building. The classification of non-residential building by type of building is according to the function a building is intended to serve, as specified on building authorisations.

VALUE BY CLASS OF BUILDING, AUSTRALIA, 1986–87

($ million)

Class of building	*Approved*	*Commenced*	*Under construction (a)*	*Completed*	*Work done (b)*	*Work yet to be done (a)*
New residential buildings—						
New houses	5,707.0	5,531.0	2,986.3	5,449.7	5,547.1	1,397.6
New other residential buildings	1,222.4	1,270.6	1,138.6	1,340.2	1,344.4	538.8
Total new residential building	*6,929.4*	*6,801.6*	*4,125.0*	*6,789.9*	*6,891.5*	*1,936.4*
Alterations and additions to residential buildings (c)	*1,112.8*	*1,095.6*	*553.9*	*1,051.9*	*1,105.3*	*242.0*
Non-residential building—						
Hotels, etc.	540.0	616.5	851.1	509.9	653.1	378.2
Shops	1,201.8	1,271.9	1,447.2	1,378.6	1,512.6	702.6
Factories	811.7	816.3	968.2	775.9	962.5	332.9
Offices	2,582.9	3,380.0	4,883.0	2,077.6	2,959.6	2,468.2
Other business premises	972.8	941.7	760.7	997.2	1,024.6	342.9
Educational	919.8	924.5	1,073.6	800.5	892.4	524.0
Religious	60.3	65.2	44.9	62.8	68.3	21.5
Health	567.9	551.6	857.2	402.3	485.6	411.9
Entertainment and recreational	339.2	416.5	624.0	369.0	554.9	237.3
Miscellaneous	459.6	422.9	1,301.8	368.6	625.2	397.6
Total non-residential building (d)	*8,456.1*	*9,407.0*	*12,811.6*	*7,742.3*	*9,738.8*	*5,817.1*
Total building	**16,498.3**	**17,304.1**	**17,490.4**	**15,584.1**	**17,735.6**	**7,995.5**

(*a*) At end of period. (*b*) During period. (*c*) Valued at $10,000 or more. (*d*) Valued at $30,000 or more.

Constant prices

Estimates of the value of work done at average 1979–80 prices are presented in the following table. Constant price estimates measure changes in value after the direct effects of price changes have been eliminated.

VALUE OF BUILDING WORK DONE AT AVERAGE 1979–80 PRICES, AUSTRALIA
($ million)

	New residential building					
Year	*Houses*	*Other residential buildings*	*Total*	*Alterations and additions to residential buildings*	*Non-residential building*	*Total building*
1981–82 . . .	3,321.3	1,392.7	4,714.0	547.7	3,499.4	8,761.1
1982–83 . . .	2,628.6	917.9	3,546.5	462.1	2,975.6	6,984.2
1983–84 . . .	3,237.6	758.5	3,996.1	475.4	3,266.5	7,738.0
1984–85 . . .	3,660.5	858.3	4,518.8	548.7	3,806.9	8,874.4
1985–86 . . .	3,585.0	799.6	4,384.6	621.8	4,615.9	9,622.3
1986–87 . . .	3,099.9	680.9	3,780.8	618.2	4,944.8	9,343.8

Building research activity

The CSIRO Division of Building Research (amalgamated with the Division of Energy Technology) is the main, and largest, centre of building research in Australia, with a total staff of some 260, about 110 of whom have professional qualifications through all the conventional sciences, social sciences and economics. The work of the Division covers all aspects of building design, maintenance, construction, and planning.

The work is carried on in four programs, namely: Design for Durability, Life Cycle Performance, Safety & Risk, and Shelter & Infrastructure. The Division has been in existence for over 40 years, and the nature of its work has changed considerably with time. Two main themes dominate the existing programs:

- information technology;
- deterioration and restoration of the infrastructure.

For further details, *see Year Book* No. 70.

Engineering Construction Survey

This section contains estimates of engineering construction activity in Australia by both public and private sector organisations and are the first estimates of total engineering construction produced by the ABS.

These estimates together with results from the Bureau's Building Activity Surveys provide a complete picture of building and construction activity in Australia for the first time.

The estimates of engineering construction activity by the private sector were compiled from the Construction Other Than Building (COTB) Survey and the new Engineering Construction Survey (ECS), which has replaced the COTB Survey from the September quarter 1986. The estimates for engineering construction activity by the public sector, which were compiled from the ECS Public sector units, were not in the scope of the COTB Survey.

The collection methodology for the ECS is different from the COTB Survey and caution should therefore be exercised when interpreting the time series derived from the two surveys.

Scope and coverage of the surveys

The ECS aims to measure the value of all engineering construction work undertaken in Australia whereas the COTB Survey only measured such work undertaken by the private sector. For the ECS, all enterprises recorded on the ABS central register of economic units and classified to the construction industry and all other units known to be undertaking engineering construction work (from trade journals, newspapers, etc.), were included in the survey framework. For the COTB Survey the framework was all known engineering construction prime contracts with a value greater than $100,000.

The cost of land and the value of building construction is excluded from the survey's scope. Where projects include elements of both building and engineering construction, for example, electricity generation and heavy industrial plant, every effort is taken to exclude the building component from these statistics.

Repair and maintenance activity is excluded from the survey as are the value of any transfers of existing assets, the value of installed machinery and equipment not integral to the structure and the expenses for relocation of utility services.

A contract for the installation of machinery and equipment, which is an integral part of a construction project, is included in the statistics even though, in some cases, the activity in installing such machinery and equipment is classified to the manufacturing industry in the *Australian Standard Industrial Classification, Volume 1* (1201.0).

Comparison of the Engineering Construction Survey (ECS) and the Construction (Other Than Building) (COTB) Survey

The main differences between the COTB Survey and ECS are as follows:

- Construction undertaken by public sector organisations is included in the ECS but not in the COTB Survey.
- Speculative and own account work undertaken by the private sector is included in the ECS but not in the COTB Survey.
- Prime contracts undertaken by the private sector and valued at less than $100,000 are within the scope of the ECS but not the COTB Survey.
- The statistical unit for the ECS is the enterprise which is defined as a unit covering all the operations in Australia of a single operating legal entity. Each collection unit is required to report details of its operations in each State.
- The statistical unit for the COTB Survey was any construction prime contract valued at $100,000 or more and undertaken by a private sector prime contractor.
- The categories of construction differ as follows:
  - (i) The 'heavy industrial plant and equipment, n.e.i' category in the COTB Survey has been divided into 'oil, gas, coal and other minerals'; 'other heavy industry' for the ECS.
  - (ii) A new ECS category has been defined called 'recreation' and includes golf courses, playing fields, racecourses, stadiums, swimming pools, velodromes, landscaping, park construction etc.
- The treatment of machinery and equipment in engineering construction is particularly difficult. The value of machinery and equipment that is integral to the structure should be included as should the cost of on-site erection of heavy machinery. All other machinery and equipment should be excluded. In ECS, this aspect has been brought to the attention of respondents whereas, in the COTB Survey, limited investigations showed that some machinery and equipment values were reported in construction prime contracts.
- Coding of 'ownership' and 'type of construction' is undertaken by the respondent in ECS whereas in the COTB Survey the Australian Bureau of Statistics carried out this coding based on information supplied.

The following tables show the value of engineering construction (ECS) activity by the private sector for sector of ownership and by the public sector for the year 1986–87.

VALUE OF ENGINEERING CONSTRUCTION ACTIVITY BY THE PUBLIC SECTOR 1986–87

($ million)

	Commenced	*Work done (a)*	*Work yet to be done (b)*
Roads, highways and subdivisions	1,075.4	1,158.8	545.5
Bridges	74.9	87.5	23.7
Railways	147.5	124.7	40.9
Harbours	25.4	31.4	15.5
Water storage and supply	284.1	338.5	253.5
Sewerage and drainage	321.5	417.5	279.1
Electricity generation, transmission and distribution	500.1	623.3	611.4
Pipelines	10.0	12.6	0.5
Recreation	82.6	75.1	36.7
Telecommunications	1,667.1	1,625.8	2.4
Heavy industry	11.6	9.7	20.0
Other	12.3	12.6	4.7
Total	**4,212.4**	**4,517.6**	**1,834.0**

(a) During period *(b)* At end of period

VALUE OF ENGINEERING CONSTRUCTION ACTIVITY BY THE PRIVATE SECTOR 1986–87

($ million)

	Commenced	*Work done (a)*	*Work yet to be done (b)*
FOR THE PRIVATE SECTOR			
Roads, highways and subdivisions	782.6	411.4	756.2
Bridges	7.4	9.3	7.7
Railways	31.8	83.3	135.5
Harbours	92.4	157.0	227.9
Water storage and supply	41.7	45.7	10.1
Sewerage and drainage	29.3	34.8	38.9
Electricity generation, transmission and distribution	99.8	86.6	329.1
Pipelines	63.5	97.5	39.4
Recreation	113.0	131.5	81.4
Telecommunications	17.8	12.5	35.5
Heavy industry	1,015.2	1,036.5	2,730.3
Other	53.6	56.9	44.5
Total	*2,348.1*	*2,163.1*	*4,436.5*
FOR THE PUBLIC SECTOR			
Roads, highways and subdivisions	1,584.4	1,944.9	3,631.3
Bridges	133.8	230.1	437.7
Railways	260.0	251.9	664.1
Harbours	99.4	140.6	210.8
Water storage and supply	406.1	515.3	1,518.6
Sewerage and drainage	478.6	581.3	1,790.2
Electricity generation, transmission and distribution	683.3	1,208.7	4,718.0
Pipelines	16.8	32.8	7.6
Recreation	119.3	107.6	185.0
Telecommunications	1,697.6	1,658.7	2,606.8
Heavy industry	90.9	88.5	445.4
Other	18.5	33.3	37.3
Total	*5,588.7*	*6,793.8*	*16,252.8*
TOTAL			
Roads, highways and subdivisions	2,367.0	2,356.3	4,387.5
Bridges	141.3	239.4	445.4
Railways	291.8	335.2	799.6
Harbours	191.8	297.6	438.6
Water storage and supply	447.8	561.0	1,528.6
Sewerage and drainage	507.9	616.1	1,829.1
Electricity generation, transmission and distribution	783.2	1,295.4	5,047.1
Pipelines	80.2	130.4	47.0
Recreation	232.2	239.0	266.4
Telecommunications	1,715.4	1,671.2	2,642.3
Heavy industry	1,106.1	1,125.0	3,175.7
Other	72.1	90.2	81.8
Total	**7,936.7**	**8,956.9**	**20,689.3**

(a) During period *(b)* At end of period

The following table shows the value of construction (other than building) activity undertaken as prime contracts commenced, under construction, completed, work done and work yet to be done in Australia for the year 1985–86.

VALUE OF CONSTRUCTION (OTHER THAN BUILDING) PRIME CONTRACTS BY OWNERSHIP, 1985-86

($ million)

	Commenced	*Under construction (a)*	*Completed*	*Work done (b)*	*Work yet to be done (a)*
PRIVATE SECTOR					
Roadwork	382.7	224.5	380.4	397.9	92.9
Dams, water supply and distribution, sewerage and drainage	16.1	6.8	18.5	18.0	4.0
Electrical power transmission, heavy electrical generating plant	24.4	25.0	29.6	21.0	10.5
Harbours	141.2	209.1	20.2	104.9	88.8
Other heavy industrial plant etc.	672.7	767.1	413.9	520.3	455.4
Other (c)	193.0	240.5	198.9	226.9	81.5
Total	*1,430.1*	*1,472.8*	*1,061.6*	*1,288.9*	*733.3*
PUBLIC SECTOR					
Roadwork	800.1	862.6	553.0	690.5	457.1
Dams, water supply and distribution, sewerage and drainage	275.4	386.4	174.1	263.7	174.5
Electrical power transmission, heavy electrical generating plant	577.5	3,335.5	520.0	827.7	948.7
Harbours	52.2	92.2	21.9	66.0	18.5
Other heavy industrial plant etc.	105.8	329.3	319.5	158.2	101.2
Other (c)	437.0	952.5	447.5	563.6	288.2
Total	*2,248.0*	*5,958.5*	*2,036.1*	*2,569.8*	1,988.1
TOTAL					
Roadwork	1,182.8	1,087.0	933.4	1,088.4	549.9
Dams, water supply and distribution, sewerage and drainage	291.5	393.2	192.7	281.8	178.5
Electrical power transmission, heavy electrical generating plant	601.9	3,360.5	549.6	848.7	959.3
Harbours	193.4	301.3	42.1	171.0	107.3
Other heavy industrial plant etc.	778.5	1,096.4	733.5	678.5	556.6
Other (c)	630.0	1,192.9	646.5	790.5	369.7
Total	**3,678.1**	**7,431.3**	**3,097.8**	**3,858.7**	**2,721.4**

(a) At end of period. (b) During period. (c) Comprises bridges, railways, pipelines, street and highway lighting, telecommunications and miscellaneous.

Construction Industry Survey

This section contains statistics obtained from a sample survey of private sector construction establishments and of public sector enterprises engaged in construction and repair and maintenance activities, conducted in respect of 1984–85. The previous Construction Industry Survey was conducted in respect of 1978–79. For further details *see Year Book* No. 70.

The private sector collection was conducted as a component of the Bureau's integrated economic statistics program. This program has been developed so that data from each industry sector conform to the same basic conceptual standards, thereby allowing comparative analysis across different industry sectors. The results of this survey are therefore comparable with economic censuses undertaken annually for the mining, and electricity and gas industries and periodically for the transport, manufacturing, wholesale, retail and selected service industries.

Private sector construction industry statistics

The collection provided detailed information on employment, wages, operating expenses, turnover, value added, capital expenditure, as well as on the structure and size of establishments in the construction industry. The following tables show, for private sector construction establishments, selected items of data by industry class and statistics on the value of work undertaken by broad commodity groups. Further statistics are contained in the publications: *Private Sector Construction Establishments, Details of Operations, States and Territories, 1984–85* (8772.0—8772.8)

PRIVATE SECTOR CONSTRUCTION ESTABLISHMENTS: SELECTED ITEMS OF DATA BY INDUSTRY CLASS, AUSTRALIA, 1984–85

		Establishments operating		*Average employment over whole year*					*Stocks*				
ASIC code	*Description*	*During the year*	*At 30 June 1985*	*Males*	*Females*	*Persons*	*Wages and salaries*	*Turnover*	*At 30 June 1984*	*At 30 June 1985*	*Purchases and selected expenses*	*Value added*	*Fixed capital, expenditure less disposals*
		(No.)	(No.)	(No.)	(No.)	(No.)	($'000)	($'000)	($'000)	($'000)	($'000)	($'000)	($'000)
4111	House construction	19,736	19,438	32,301	14,480	46,781	309,018	5,107,022	528,511	666,380	4,194,263	1,050,628	79,403
4112	Residential building construction, n.e.c.	1,636	1,536	3,583	1,160	4,742	55,346	830,312	230,924	334,774	731,419	202,743	36,073
4113	Non-residential building construction	3,146	2,987	27,170	3,813	30,982	649,969	5,716,973	261,118	333,003	4,578,753	1,210,105	98,918
411	*Total building construction*	*24,518*	*23,961*	*63,053*	*19,453*	*82,506*	*1,014,333*	*11,654,308*	*1,020,553*	*1,334,157*	*9,504,435*	*2,463,477*	*214,394*
4121	Road and bridge construction	861	844	10,748	1,126	11,874	271,719	1,655,526	71,924	102,867	1,166,716	519,754	49,427
4122	Non-building construction, n.e.c.	2,582	2,519	20,243	2,898	23,141	494,845	2,498,836	81,699	99,321	1,707,739	808,719	73,391
412	*Total non-building construction*	*3,443*	*3,362*	*30,990*	*4,024*	*35,014*	*766,564*	*4,154,361*	*153,623*	*202,189*	*2,874,455*	*1,328,473*	*122,818*
41	*Total general construction*	*27,961*	*27,323*	*94,044*	*23,477*	*117,521*	*1,780,897*	*15,808,669*	*1,174,176*	*1,536,347*	*12,378,890*	*3,791,950*	*337,212*
4231	Concreting	4,981	4,459	10,632	3,359	13,992	144,873	823,723	11,049	14,908	506,728	320,855	21,353
4232	Bricklaying	9,243	8,912	14,760	4,419	19,179	79,420	439,166	3,452	3,948	158,981	280,682	15,813
4233	Roof tiling	1,086	1,035	2,246	645	2,891	26,999	165,756	5,037	5,678	103,672	62,725	3,097
4234	Floor and wall tiling	3,057	3,029	3,657	1,366	5,022	12,575	127,589	1,267	1,832	58,543	69,611	3,859
4241	Structural steel erection	1,355	1,206	4,278	1,086	5,364	77,687	237,586	7,664	13,036	114,670	128,289	3,723
4242	Plumbing	10,595	10,396	21,822	7,661	29,483	262,112	1,357,167	37,203	44,735	761,730	602,969	34,287
4243	Electrical work	8,697	8,561	23,715	6,632	30,348	373,516	1,470,041	59,561	67,764	791,877	686,367	28,501
4244	Heating and air-conditioning	1,203	1,177	7,598	1,391	8,989	149,642	741,046	36,397	46,323	497,725	253,247	7,439
4245	Plastering and plaster fixing	5,306	4,551	8,377	2,674	11,051	81,888	576,652	8,957	10,231	363,100	214,826	12,311
4246	Carpentry	11,270	10,528	15,993	5,094	21,088	94,700	573,016	9,206	13,932	254,918	322,824	31,440
4247	Painting	10,206	9,840	16,477	5,450	21,928	122,800	638,537	8,164	10,348	275,409	365,311	26,617
4248	Earthmoving and dredging	4,331	4,165	11,523	3,510	15,033	166,812	911,331	16,394	19,969	525,016	389,890	66,305
4249	Special trades, n.e.c.	5,721	5,607	15,036	4,621	19,657	223,203	1,078,435	38,004	40,308	619,826	460,913	25,157
42	*Total special trade construction*	*77,051*	*73,467*	*156,115*	*47,909*	*204,024*	*1,816,226*	*9,140,046*	*242,356*	*293,013*	*5,032,194*	*4,158,509*	*279,901*
41–42	**Total construction**	**105,012**	**100,789**	**250,159**	**71,386**	**321,545**	**3,597,124**	**24,948,715**	**1,416,532**	**1,829,359**	**17,411,084**	**7,950,459**	**617,113**

PRIVATE SECTOR CONSTRUCTION ESTABLISHMENTS: VALUE OF CONSTRUCTION PRIME AND SUB-CONTRACTS, SPECULATIVE WORK AND CAPITAL WORK DONE FOR OWN USE BY TYPE OF PROJECT AND INDUSTRY CLASS, AUSTRALIA, 1984–85

($'000)

		Building construction							
ASIC code	*Description*	*Houses*	*Other residential building*	*Total residential building*	*Non-residential building*	*Total building construction*	*Engineering construction*	*Repair maintenance and demolition (a)*	*Total construction*
4111	House construction	4,558,534	200,682	4,759,217	198,080	4,957,297	7,001	140,360	5,104,658
4112	Residential building construction	95,583	714,346	809,929	57,498	867,428	1,302	10,907	879,636
4113	Non-residential building construction	125,192	157,994	283,186	5,114,530	5,397,715	177,796	102,890	5,678,401
4121	Road and bridge construction	6,104	604	6,708	25,314	32,022	1,457,357	115,663	1,605,043
4122	Non-building construction n.e.c.	18,064	1,478	19,543	31,589	51,132	2,304,033	78,825	2,433,990
41	*Total general construction*	*4,803,478*	*1,075,105*	*5,878,583*	*5,427,011*	*11,305,594*	*3,947,488*	*448,645*	*15,701,728*
4231	Concreting	360,059	40,427	400,487	296,276	696,763	91,799	27,434	815,995
4232	Bricklaying	266,325	49,889	316,213	101,125	417,339	1,036	16,471	434,845
4233	Roof tiling	125,428	12,780	138,207	15,802	154,009	—	9,776	163,785
4234	Floor and wall tiling	82,598	10,894	93,492	26,201	119,694	939	2,906	123,539
4241	Structural steel erection	5,915	2,579	8,494	96,479	104,973	123,394	6,599	234,965
4242	Plumbing	537,307	96,155	633,462	383,584	1,017,046	41,144	280,555	1,338,745
4243	Electrical work	278,260	49,009	327,268	739,555	1,066,823	189,958	180,957	1,437,738
4244	Heating and air conditioning	70,602	12,330	82,932	588,069	671,001	4,418	47,150	722,570
4245	Plastering and plaster fixing	316,051	51,188	367,240	175,262	542,502	2,592	13,563	558,656
4246	Carpentry	275,929	35,550	311,479	216,551	528,030	4,947	33,656	566,633
4247	Painting	227,769	30,779	258,548	182,411	440,959	26,044	163,550	630,553
4248	Earthmoving and dredging	98,868	11,991	110,860	136,286	247,146	576,962	52,019	876,126
4249	Special trades n.e.c.	264,537	36,201	300,738	435,063	735,801	132,180	155,785	1,023,765
42	*Total special trade construction*	*2,909,647*	*439,773*	*3,349,419*	*3,392,665*	*6,742,085*	*1,195,413*	*990,418*	*8,927,917*
41-41	**Total construction**	**7,713,125**	**1,514,878**	**9,228,002**	**8,819,676**	**18,047,679**	**5,142,901**	**1,439,064**	**24,629,645**

(*a*) To all types of buildings and structures.

Public sector construction activity statistics

The Public Sector Construction Activity Survey provided details on the construction and maintenance activities of all public sector enterprises engaged in managing or undertaking construction and maintenance activity using their own employees or a combination of their own employees and contractors. Details such as expenses, payments to contractors and employment associated with new construction and major alterations and additions, and total expenses and employment associated with road and other maintenance activities was provided. No details are available for public sector enterprises which contracted out all construction and maintenance work.

Because of the different concepts used in the collection of these data, the public sector results cannot be validly aggregated with those for the private sector.

The following table shows expenditure of public sector enterprises by activity and level of government. Further statistics are contained in the publication: *Public Sector Construction Activity Survey, 1984–85* (8775.0).

PUBLIC SECTOR ENTERPRISES—CONSTRUCTION AND MAINTENANCE EXPENDITURE BY LEVEL OF GOVERNMENT, AUSTRALIA, 1984–85

($'000)

	Construction expenditure					
Level of Government	*Houses*	*Other residential building*	*Non-residential building*	*Engineering construction*	*Demolition*	*Total*
Commonwealth	24,705	3,351	422,720	2,122,063	594	2,573,434
State	203,337	106,664	765,004	4,874,907	547	5,950,460
Local	6,974	4,145	217,555	1,409,533	405	1,638,613
Total	**235,016**	**114,161**	**1,405,279**	**8,406,502**	**1,547**	**10,162,506**

	Maintenance expenditure		
Level of Government	*Road maintenance*	*Other maintenance*	*Total*
Commonwealth	22,646	1,725,163	1,747,809
State	489,714	1,727,806	2,217,520
Local	582,631	641,322	1,223,954
Total	**1,094,990**	**4,094,294**	**5,189,285**

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Building Approvals, Australia (8731.0)
Building Activity, Australia: Dwelling Unit Commencements, Preliminary (8750.0)
Building Activity, Australia (8752.0)
Engineering Construction Survey, Australia (8762.0)
Construction Industry Survey: Private Sector Construction Establishments, Details of Operations, States and Territories, 1984–85 (8772.0–8772.8)
Public Sector Construction Activity Survey, 1984-85 (8775.0)

Details for particular States are available from publications issued regularly by the Deputy Commonwealth Statistician in each State.

Other Publications

The annual reports of the Commonwealth and State Government Housing Authorities show further details of government activities in the field of housing.

CHAPTER TWENTY-ONE

TRANSPORT AND COMMUNICATIONS

This chapter contains information on transport and communications and the government bodies concerned with these activities. More detailed figures and particulars for earlier years are included in the publications listed in the bibliography at the end of the chapter. Two special articles have been included in this chapter, and can be found on pages 772 and 775.

TRANSPORT ORGANISATIONS

The Australian Transport Advisory Council—ATAC

In April 1946, Commonwealth and State Governments agreed to establish a co-ordinating and advisory council at Ministerial level with the principal function of reviewing annually the various laws and regulations deemed necessary to safeguard the interests of the State governments and road users generally, and to consider matters of transport policy. The Australian Transport Advisory Council comprises Federal, State and Territory Ministers responsible for transport, roads and marine matters. The New Zealand Minister of Transport is also represented on the Council as an observer.

At present, ATAC meets twice each year and its primary role is to review and co-ordinate various aspects of transport policy, development and administration. ATAC functions through initiating discussion and reports on any matter raised by Council members, and by providing advice on matters which will promote better co-ordination and development of transport to the benefit of Australia. ATAC has one policy advisory group reporting directly to it, the Standing Committee on Transport (SCOT). SCOT comprises a representative of each ATAC Minister, usually the Heads of the relevant departments, and deals with overall issues of policy co-ordination and development. SCOT is supported by four groups of specialist advisers covering the interests of road, rail, road safety and marine and ports.

In addition, the following technical committees and subsidiary bodies report to the Marine and Ports Group and the Road Safety Group:

- Ship Standards Advisory Committee
- Marine Pollution Advisory Committee
- Advisory Committee on Promotion and Education for Road Safety
- Road User and Trauma Advisory Committee
- Advisory Committee on Transport of Dangerous Goods
- Vehicle Standards Advisory Committee
- Advisory Committee on Vehicle Emissions and Noise
- Advisory Panel on Recall and Unsafe Parts
- Data Working Group
- Australian Motor Vehicle Certification Board.

Transport Industries Advisory Council—TIAC

The Transport Industries Advisory Council was formed following the March 1971 Australian Transportation Conference. The Council advises the Commonwealth Minister for Transport and Communications on national transport issues.

The members of TIAC are drawn from senior management of authorities representing all modes of transport, including user groups, government bodies and unions. The Minister appoints members on the basis of personal expertise and the contribution they may be able to make to Council affairs. The full Council, which meets three times a year, operates through an Executive Committee and subject-specific Project Committees. A report of TIAC activities is published annually in the Department of Transport and Communications Annual Report.

Australian Road Transport Advisory Committee—ARTAC

The Australian Road Transport Advisory Committee comprises representatives of all sectors of the road freight industry and others with relevant specialist expertise. This Committee provides a specific channel of road freight industry advice to the Commonwealth Minister. Membership of ARTAC is drawn from TIAC.

Aviation Industry Advisory Council—AVIAC

AVIAC was established in 1978 to enhance the level of consultation between the aviation industry and the government. The Council provides advice to the Commonwealth Minister for Transport and Communications on policies, plans and programs relating to the aviation industry within Australia, promotes the continuing development of a safe, efficient, economic aviation industry, and provides a forum for discussion of important matters of joint concern to the aviation industry and government.

Membership of the Council consists of the Commonwealth Minister for Transport and Communications (Chairman); Secretary to the Department of Transport and Communications; Chairman of Qantas Airways Ltd; Chairman of Australian National Airlines Commission (Australian Airlines); Chairman of Regional Airlines Association of Australia Ltd; Chairman of East-West Airlines; National Chairman of the General Aviation Association; Joint Chairman of Ansett Transport Industries Ltd; National President of the Royal Federation of Aero Clubs of Australia and President of the Aircraft Owners and Pilots Association of Australia.

AVIAC has established a Committee of Advisers to assist in the analysis and preparation of matters to put to the Council for deliberation and decision.

The Federal Bureau of Transport Economics—BTE

The Federal Bureau of Transport Economics is a professional research body which undertakes independent studies and investigations to assist the Commonwealth Government in formulating policy relating to all modes of transport.

The primary function of the BTE is to advise the Commonwealth Government on the economic, financial and technical aspects of air, road, rail and sea transport in Australia. In pursuit of this overall function, the BTE analyses the nature, capacity, performance and finance of transport systems. It also investigates the economic and resource allocation implications of such systems. The BTE has a secondary function of providing assistance to State and local governments, Commonwealth and State instrumentalities and the private sector to identify and address transport problems.

Although formally linked to the Federal Department of Transport and Communications, the BTE has a considerable degree of professional and administrative autonomy and reports directly to the Minister for Transport and Communications on its program of research work.

Independent Air Fares Committee

The Independent Air Fares Committee was established by the *Independent Air Fares Committee Act 1981*, with the responsibility for approving all passenger fares charged on domestic air services by trunk route, regional and commuter operators. The Act, which is part of the 'two-airline policy' legislation, came into operation in January 1982. The Committee's role is that of a fare determining authority.

Operators may request the Committee to conduct a review to determine the economy air fares to be charged. The Committee approves discount air fares on application from operators where it is satisfied that a proposal meets criteria specified in the Act. Details of economy and discount fares approved by the Committee are notified in the *Commonwealth of Australia Gazette*.

At the request of the Minister for Transport and Communications, the Committee undertakes cost allocation reviews to determine how costs attributable to domestic passenger air services should be allocated between flagfall and distance components of air fares. Public hearings and submissions form part of a cost allocation review during which the principles of fare setting are examined.

THE TRANSPORT INDUSTRY

Transport Industry Survey

This section contains statistics obtained from a survey of transport establishments conducted in respect of 1983–84 (referred to as the Transport Industry Survey). This survey was the first of its kind conducted in Australia and included establishments predominantly engaged in providing passenger or freight transport services for hire or reward by road, rail, water and air transport (collectively referred to as the modal transport industries) plus freight forwarding.

The survey was conducted as a component of the Australian Bureau of Statistics' integrated economic statistics system and the results are comparable with economic censuses and surveys undertaken annually for the mining, manufacturing and gas industries and periodically for the wholesale, retail and selected service industries.

Summary of operations

The following table shows key items of data by industry mode for transport establishments in Australia, for the year 1983–84. The industries described are based on the 1983 edition of the *Australian Standard Industrial Classification* (ASIC).

TRANSPORT ESTABLISHMENTS: SUMMARY OF OPERATIONS BY INDUSTRY MODE, AUSTRALIA, 1983–84

ASIC Code	*Description*	*Establishments at 30 June 1984*	*Average employment over whole year(a)*	*Wages and salaries(b)*	*Turnover*	*Stocks*		*Total purchases, transfers in and selected expenses*	*Value added*	*Fixed capital expenditure less disposals*
						Opening	*Closing*			
		No.	No.	$m	$m	$m	$m	$m	$m	$m
511	Road freight transport	32,943	99,606	902.5	5,187.3	47.4	49.8	2,921.8	2,267.8	237.6
512	Road passenger transport	10,615	45,841	571.2	1,528.6	34.0	37.4	593.5	938.5	56.4
5200	Rail transport	12	86,721	1,688.5	3,314.8	178.9	179.4	1,417.5	1,897.8	406.9
53	Water transport . .	165	8,978	212.7	1,238.9	14.9	14.7	814.5	424.3	23.2
54	Air transport . . .	334	23,597	600.8	2,958.0	20.4	19.9	1,747.9	1,209.6	178.1
51–54	**Total modal transport**	**44,069**	**264,743**	**3,975.7**	**14,227.6**	**295.6**	**301.2**	**7,495.2**	**6,738.0**	**902.2**

(*a*) Includes working proprietors and partners. (*b*) Excludes the drawings of working proprietors and partners.

Business Vehicle Survey

Concurrent with the Transport Industry Survey (TIS), the Bureau conducted a Business Vehicle Survey (BVS) to obtain a more complete picture of road freight transport activity in Australia. This involved the collection of road freight transport information from a sample of private enterprises whose main activity was not road freight transport but who operated at least one truck with a gross vehicle mass of 2.7 tonnes or more and used that truck to carry freight on public roads.

Results from the TIS and BVS were combined to produce estimates of road freight activity as shown in the following table.

ROAD FREIGHT ACTIVITY OF PRIVATE ENTERPRISES: SUMMARY OF ACTIVITY BY INDUSTRY DIVISION, AUSTRALIA, 1983–84

			Trucks operated at 30 June 1984			*Truck drivers at 30 June 1984*				
ASIC Code	*Description*	*Enterprises at 30 June 1984*	*Rigid*	*Articulated*	*Total*	*Working proprietors/ partners*	*Employees*	*Total*	*Wages and salaries paid to truck drivers(a)*	*Freight carried on trucks (b)*
A	Agriculture, forestry, fishing and hunting . .	85,796	105,446	8,163	113,609	11,727	3,416	15,143	35.3	58.5
B	Mining	557	2,151	424	2,575	62	1,810	1,872	37.6	17.3
C	Manufacturing . . .	8,109	21,545	2,867	24,413	694	16,049	16,743	279.0	43.8
E	Construction	12,383	18,327	1,494	19,822	2,066	4,860	6,926	79.8	40.1
F	Wholesale and retail trade	19,333	34,222	3,544	37,766	4,070	16,885	20,955	297.9	55.8
511	Road freight transport	32,616	36,535	21,307	57,842	28,147	27,818	55,966	501.5	362.1
512–580	Other transport and storage.	742	1,237	251	1,488	157	684	841	13.0	5.2
G	*Total transport and storage . . . .*	*33,358*	*37,772*	*21,558*	*59,330*	*28,305*	*28,502*	*56,807*	*514.5*	*367.3*
I	Finance, property and business services . .	1,718	3,725	922	4,647	97	2,612	2,710	51.0	11.4
K	Community services . .	1,055	2,277	42	2,319	500	1,187	1,688	20.4	6.5
L	Recreation, personal and other services . . .	1,773	2,523	159	2,682	247	677	924	10.0	6.2
	Total.	**164,081**	**227,988**	**39,174**	**267,161**	**47,769**	**75,999**	**123,768**	**1,325.5**	**606.9**

(*a*) Excludes the drawings of working proprietors and partners. (*b*) Estimates of freight carried relate to freight uplifted by trucks and therefore, to the extent that transhipment occurs (i.e. the transfer of freight from one truck to another), estimates of freight carried will overstate the actual physical quantity of freight moved.

NOTE: Road freight activity data collected from road freight establishments included in the TIS has been tabulated against the industry to which the enterprise of the road freight transport establishment is classified, e.g. the figures for a road freight establishment of a manufacturing enterprise would be tabulated against ASIC Division C.

SHIPPING

Control of shipping

Commonwealth Government navigation and shipping legislation

Commonwealth Acts concerned with shipping are: the *Navigation Act 1912*, the *Sea-Carriage of Goods Act 1924*, the *Seamen's Compensation Act 1911*, the *Seamen's War Pensions and Allowances Act 1940*, the *Protection of the Sea (Discharge of Oil from Ships) Act 1981*, the *Protection of the Sea (Civil Liability) Act 1981*, the *Protection of the Sea (Powers of Intervention) Act 1981*, the *Protection of the Sea (Shipping Levy) Act 1981*, the *Protection of the Sea (Shipping Levy Collection) Act 1981*, the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983*, the *Protection of the Sea Legislation Amendment Act 1986*, the *Australian Shipping Commission Act 1956*, the *Environment Protection (Sea Dumping) Act 1981*, the *Submarine Cables and Pipelines Protection Act 1963*, the *Lighthouses Act 1911*, the *Explosives Act 1961*, the *King Island Shipping Service Agreement Act 1974*, the *Bass Strait Sea Passenger Service Agreement Act 1984*, the *Ship Construction Bounty Act 1975*, the *Australian Shipping Commission (Additional Capital) Act 1985*, the *Ships (Capital Grants) Act 1987*, the *Trade Practices Act 1974* Part X, the *Shipping Registration Act 1981*.

Navigation Act

The *Navigation Act 1912 as Amended*, provides for various regulatory controls over ships and their crews, passengers and cargoes, mainly for the preservation of life and property at sea. Substantial penalties are provided for serious offences. The Act gives effect to a number of important international conventions produced under the aegis of the International Maritime Organisation (IMO).

There are 25 sets of Regulations under the Act, and a system of Marine Orders which give legislative effect to various safety and technical requirements in respect of ships, their cargoes and persons on board.

Taken in the order in which they appear in the Act, the main substantive matters dealt with are as outlined below.

Masters and seamen

Some sections deal with the examination of masters, mates and engineers for certificates of competency. Other sections ensure that appropriate conditions apply to crews serving on ships by providing for the supervision of the engagement, discharge and payment of wages; discipline at sea; the settlement of wages and other disputes; the return to their home port of distressed seamen; taking charge of wages and effects of deceased seamen and of those who have deserted or been left behind; and inquiries into deaths at sea. These matters are administered by Mercantile Marine Offices established at numerous ports. The health of seamen is cared for by the prescription of scales of medicines and medical stores to be carried by ships, and there are provisions to give effect to International Labour Organisation Convention requirements for the accommodation of crews. Plans for new or altered accommodation in ships have to be approved by a Crew Accommodation Committee.

There are requirements for the manning of ships and manning disputes are often dealt with by statutory Committees of Advice. The Act provides for a Marine Council to advise the Minister on the suitability of persons for engagement as seamen.

Ships and shipping

There are particularly important provisions dealing with ship safety in such matters as survey of ships, load lines, life-saving and fire appliances, prevention of collisions, and carriage of potentially dangerous cargoes. While in Australia, all ships which trade interstate or overseas come under the survey provisions of the Navigation Act and require certificates issued by the Department of Transport and Communications, unless they are registered in a country which is a party to the Convention concerned and hold valid certificates issued by their governments and conforming to the requirements of the Safety of Life at Sea and Load Lines Conventions. There is power to detain any ship, the condition of which does not conform with the conditions set out in its certificate or which appears to be overloaded or otherwise unseaworthy.

Passengers

These provisions deal with matters necessary or convenient for regulating the carriage of passengers in respect of such matters as numbers that may be carried, accommodation and health aspects.

Offshore industry

These provisions deal with offshore industry vessels and offshore industry mobile units. Marine Orders giving effect to IMO resolutions on this sector of the marine industry were recently introduced.

Coasting trade

Under the coasting trade provisions of the Navigation Act, the Australian coastal trade is reserved for licensed vessels, i.e. those which employ seamen at Australian wage rates. The Act does not restrict the class of ships which may obtain a licence. It is open to any vessel, irrespective of the registry, to obtain a licence on compliance with this condition and to operate in the Australian coastal trade, subject to permission being given for the importation of the vessel under the Customs (Prohibited Imports) Regulations where necessary. Provision exists for unlicensed vessels to operate in the coasting trade under single voyage permits in certain circumstances where licensed vessels are not available or are inadequate to meet the needs of the trade. Strict control is exercised over the issue of permits for the carriage of coastal cargoes.

Wrecks and salvage

There are provisions in relation to wrecks and salvage, covering preservation of life and of the wreck and its cargo and related matters.

Limitation and exclusion of shipowners' liability

These sections give effect to an international convention and make provision on the widest possible basis for the limitation of shipowners' liability in Australia.

Courts of Marine Inquiry

There are provisions for the holding of Courts of Marine Inquiry to investigate the circumstances attending any casualties to ships that come within Commonwealth legislative authority, usually following a preliminary investigation.

Shipping Registration Act

The *Shipping Registration Act 1981* received Royal Assent on 25 March 1981 and was proclaimed on 26 January 1982. This Act replaces Part I of the *U.K. Merchant Shipping Act* 1894 under which ships in Australia were registered as British ships. The Act provides for all ships on the British Register in Australia to be automatically transferred to the new Australian Register. The Act has two basic objectives, namely the conferring of Australian nationality on Australian-owned ships and the registration of ownership and encumbrances.

The Act was amended in 1985 to improve the general administration and the protection of registered and unregistered interests.

Taken in order in which they appear in the Act, the main substantive matters are as follows.

Registration of ships

This part deals with the obligation to register Australian-owned ships, the ships permitted to be registered, the application for registration, particulars to be entered in the Register, the issue of Registration Certificates, Provisional Registration Certificates and Temporary Passes, changes in ownership, marking and naming of the ship, nationality of ships, flags to be flown, assuming and concealing Australian nationality.

Transfers, transmissions and mortgages

This part deals with the transfer, transmission of ship and shares, the taking out, transfer, transmission and discharge of mortgages and the entry of this information into the Register. Caveats can be lodged to protect unregistered interests.

Administration

This part deals with the appointment of the Registrar, delegation of the powers of the Minister and Registrar, the establishment of the Shipping Registration Office and Branch Offices.

Register of ships

This part deals with the maintenance, rectification and inspection of the Register.

Transitional provisions

This part deals with the change over from the previous law to the new legislation. This includes the completion of transactions commenced under the previous law and the acceptability of documents prepared under the previous law. This part is now largely non-operative.

Ships (Capital Grants) Act

The *Ships (Capital Grants) Act 1987* provides shipowners with a taxable grant of 7 per cent of the purchase price of eligible new, or newly-acquired second-hand trading ships. The legislation defines the conditions and procedures under which a grant may be paid. Briefly, the Act requires that ships hold a category certificate and be crewed in accordance with crewing benchmarks specified for that category, be registered in Australia and crewed with Australian residents. If newly-acquired second-hand tonnage, the ship concerned must not have been registered in Australia before, and be no more than five years old. The grant scheme is applicable only to vessels ordered after 22 December 1986 and which commence operations between 1 July 1987 and 30 June 1992 for new ships, or 30 June 1990 for second-hand ships.

Australian Shipping Commission

The Australian Coastal Shipping Commission was established by the *Australian Coastal Shipping Commission Act 1956*. Its role has been to establish, maintain and operate interstate, overseas and territorial shipping services. In October 1974, the Commission's title was changed to the Australian Shipping Commission to reflect the increasing importance of its overseas trading activities. In 1980 the Australian Shipping Commission Act was amended to increase the Commission's borrowing powers and give it greater flexibility in determining freight rates. Further amendments to the Act were introduced in 1983, giving the Commission greater control over its day-to-day operations and allowing it to operate more commercially.

As at 30 June 1987 the Commission, trading as the Australian National Line (ANL), owned and operated a fleet of seventeen ships. The fleet included twelve ships engaged in overseas trades comprising seven liner ships totalling 181,000 deadweight tonnes, and five bulk carriers totalling 334,000 deadweight tonnes.

The fleet also included five ships engaged in coastal trade, two liner ships totalling 15,000 deadweight tonnes and three bulk carriers totalling 185,000 deadweight tonnes. A further vessel was laid up.

The Line operated specialised terminals at Adelaide, Melbourne, Burnie, Bell Bay, Sydney and Brisbane.

In recent times the Line has been affected by the general downturn experienced by the shipping industry, particularly in international trade. In 1984 it initiated a review of all its services. It instituted a major rationalisation and withdrew from unprofitable services which resulted in the disposal of obsolete vesssels. In an effort to broaden its revenue base and provide a more integrated transport service, ANL has moved into shipping related activities, particularly container management, ship agency and ship management services.

Shipbuilding assistance

The shipbuilding industry has been assisted by the government since the introduction of the shipbuilding subsidy scheme in 1947.

Ships built at major yards include small cargo ships, offshore supply ships, passenger ferries, fishing ships, dredges and barges. In addition, there are numerous smaller yards building non-bountiable ships such as pleasure craft, small fishing ships, and other small craft. Construction of large ships in Australia ceased in 1978.

Under the *Bounty (Ships) Act 1980*, bounty is accorded to the production in Australia of vessels over 150 gross construction tons, or over 21 metres in the case of fishing ships. Bounty is payable on a 'cost of construction basis' at a rate of 20 per cent.

The report of the Task Force on the Australian Shipbuilding Industry submitted to the Government in January 1984 recommended action be taken to increase the through-put of Australian yards. In October 1984, a major new package designed to assist the Australian Shipbuilding Industry was announced by the Government. The package included the extension of the bounty to cover ships built for export; a proposed industrial agreement between industry and the ACTU; introduction of registration criteria for shipbuilders who want to claim bounty; and the establishment of a Shipbuilding Consultative Group to monitor progress in the industry and register shipbuilders.

In August 1986, the Government announced changes to the shipbuilding bounty arrangements, including the setting of an absolute limit of $144 million on funds available for bountiable ships over the period to the end of June 1989. The distinction between vessels built for domestic and export markets was ended for purposes of bounty eligibility. Builders of domestic vessels, like builders of export vessels, are required to reserve bounty funds from within the $144 million. In addition, the rate of bounty for certain classes of vessels was reduced from 20 per cent to 15 per cent from 1 January 1988. The higher rate still applies to tugs, bulk carriers, rig servicing and fishing vessels and to all vessel modifications. A further significant change has been the application of orderly development criteria to all shipbuilders seeking access to bounty.

As at 30 June 1987, 27 shipbuilders were registered for bounty purposes. In 1986–87, 64 bountiable vessels were completed—the largest number constructed in any one year since the introduction of the *Bounty (Ships) Act 1980* and an increase of 3 per cent over 1985–86.

Total financial assistance to the Australian shipbuilding industry in 1986–87 amounted to $42.0 million (as compared to $38.7 million in 1985–86 and $28.5 million in 1984–85).

Ship repair

In October 1986, the Government announced a $6 million ship repair assistance package aimed at strengthening the ship repair industry. Two major elements of the package are the bounty payable to registered ship repairers, and the extension of the Department of Transport and Communications' official ship safety inspection system to give effect to internationally accepted health and safety standards based on the International Labour Organisation (ILO) Convention 147. The bounty applies to international trading vessels of at least 6,000 deadweight tonnes whether Australian or foreign owned and is payable up to 30 per cent of the repair contract price. To be eligible for bounty, repairers must be registered under the *Bounty (Ship Repair) Act 1986*.

Importation of ships

The control of imports forms an integral part of the government's shipbuilding assistance arrangements, complementing the bounty legislation. Under the Customs (Prohibited Imports) Regulations, new ships over 150 gross construction tonnes (gct), new fishing vessels over 21 metres in length and second-hand vessels over 70 gct are prohibited imports unless the importer has permission from the Minister for Transport and Communications. All new vessels, second-hand vessels of a type not available new from Australian shipyards, dredges over 2,000 gct and second-hand vessels over 10,000 gct are eligible for permanent importation. In addition, temporary importation, generally for up to two years, of other second-hand vessels between 70 gct and 10,000 gct may be authorised in certain circumstances, as long as a suitable vessel is not already available locally for the task, or will not become available within a reasonable time.

Stevedoring industry

In December 1977, legislation was introduced which provided for new administrative, financial and industrial arrangements for the stevedoring industry, and abolished the Australian Stevedoring Industry Authority. The arrangements give the parties directly involved in the industry greater responsibility in the industry's affairs.

The Stevedoring Industry Finance Committee is responsible for the disbursement of funds collected through statutory man-hour and cargo levies.

A federal co-ordinating committee, comprising representatives of the employers and the Waterside Workers' Federation (WWF) and Broken Hill Pty Ltd (BHP) and the Australian National Line, oversees the operation of arrangements agreed to in the General Agreement between employers and the WWF. At the port level such matters are handled by Port Co-ordinating Committees set up in the major ports.

Under section 85A of the *Conciliation and Arbitration Act 1904*, a Port Conciliator Service was created to assist parties to an industry award to implement the procedures of that award for the prevention or settling of disputes.

A non-statutory Stevedoring Industry Consultative Council has been established to provide a forum for discussion and liaison between governments, user interests and the operating sections of the industry. The Chairman is appointed by the Commonwealth Government.

The Statutory provisions relating to the industry are contained in the *Stevedoring Industry Finance Committee Act 1977*, the *Stevedoring Industry Levy Act 1977*, the *Stevedoring Industry Levy Collection Act 1977*, the *Port Statistics Act 1977* and Part III, Division 4 of the *Conciliation and Arbitration Act 1904*.

Waterfront Strategy

In December 1986, the Federal Government announced a comprehensive strategy to improve the efficiency, productivity, reliability and industrial relations record of Australia's waterfront and related industries. The Waterfront Strategy was developed following consideration of the Report of the Industry Task Force on Shore-Based Shipping Costs.

The strategy involves four industry based groups working under the umbrella of the Interstate Commission, implementing solutions to problems in their separate areas of the shore-based shipping industry. The four industry groups are: Stevedoring Industry Review Committee; Importer/Exporter Panel; Industry Committee; and Australian Transport Advisory Council's Standing Committee on Transport.

Tasmanian Freight Equalisation Scheme

The Tasmanian Freight Equalisation Scheme was introduced from 1 July 1976 to provide assistance to the shippers of certain non-bulk goods between Tasmania and the mainland of Australia. The scheme aims to alleviate the additional transport costs which have to be borne by Tasmanian shippers because of their separation from the mainland by sea. Responsibility for administration of the scheme lies within the Transport portfolio.

The northbound component of the scheme applies to specified goods produced in Tasmania which are shipped by sea to the mainland for use or sale. The southbound component covers certain raw materials, machinery and equipment used in Tasmania's manufacturing, mining and primary industries. In 1986–87, $24.7 million in assistance was paid on northbound and $2.8 million in assistance was paid for southbound cargoes.

In 1984, the Federal Government requested that the Interstate Commission investigate the scheme. The Commission's report was published in March 1985. Following consideration of the report, the Government decided to implement a number of changes to the scheme recommended by the Commission with effect from 1 September 1985, including the establishment of a Review Authority to provide independent advice on the administration of the scheme.

Trade Practices Act

The Overseas Cargo Shipping provisions of the *Trade Practices Act 1974* (*Part X—Overseas Cargo Shipping*) are administered by the Transport and Communications portfolio.

Part X establishes conditions for the operation of outwards shipping conferences and individual shipowners operating in Australia's outwards trades. Conference agreements between several shipowners in a particular trade make provision for the fixing of common freight rates. They may also include provisions for pooling arrangements and shares of the trade and rationalised sailing schedules.

Part X exempts conferences from the generally applicable anti-restrictive provisions of the Act, and seeks to ensure adequate safeguards to protect shippers through:

- requiring the filing of outwards conference agreements;
- requiring shipowners to give undertakings to hold meaningful negotiations with the designated shipper body, the Australian Shippers' Council (ASC);
- providing for disapproval of a conference agreement to be exercised by the Governor-General on a number of prescribed grounds, such as a failure on the part of the shipowner to comply with an undertaking, lack of due regard to the need for overseas shipping services to be efficient, economical and adequate, prevention or hindrance of an Australian flag operator from engaging efficiently in overseas cargo shipping to a reasonable extent.

Comparable provisions apply to individual shipowners who are not party to a conference agreement.

Marine pollution

The *Protection of the Sea (Discharge of Oil from Ships) Act 1981*, the *Protection of the Sea (Powers of Intervention) Act 1981*, the *Protection of the Sea (Civil Liability) Act 1981*, the *Protection of the Sea (Shipping Levy)* and *(Shipping Levy Collection) Acts 1981* currently provide the Commonwealth with the power to deal with matters relating to marine oil pollution.

The Acts respectively provide for the control of discharges at sea and provision of control equipment and procedures on ships; empower the Minister to intervene to take action to prevent or reduce pollution, make provision relating to limitation of liability of oil tankers for oil pollution damage; and provide for the collection of a levy to finance the National Plan to Combat Pollution of the Sea by Oil.

Two further important Acts which will apply the provisions of the International Convention for the Prevention of Pollution from Ships 1973–78 were expected to be proclaimed during 1987. The *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* and the *Navigation (Protection of the Sea) Amendment Act 1983* will implement improved provisions concerning the prevention and limitation of pollution by oil and specified noxious substances, and the prohibition or control of discharges of oil or noxious liquid substances at sea. The Acts will also, when proclaimed, require the provision of control equipment and operational procedures on ships.

Collection and presentation of statistics

Statistics relating to shipping and cargo are compiled from information provided to the Australian Customs Services (ACS) by importers, exporters, shipping companies and their agents. This information is supplied to the Australian Bureau of Statistics by ACS on a regular basis and is used to produce transport oriented statistics via the following two collections:

Shipping and Cargo (B380). A direct collection from shipping companies of details of ship movements and cargo carried.

Shipping and Air Cargo Commodity Statistics (SACCS). A collection which combines information from import and export documents submitted to the ACS with transport and shipping information to provide a comprehensive picture of the transport base of Australia's foreign trade.

Shipping and Cargo Statistics

The scope of the statistics

The statistics relate to ships calling at or departing from Australian ports for the purpose of carrying cargo from or to overseas ports. Details are not required for:

(i) naval ships;
(ii) yachts and other craft used for pleasure;
(iii) foreign fishing ships that neither load nor discharge cargo;
(iv) Australian registered fishing ships operating from Australian ports;
(v) geographical survey ships, seismic survey ships, oceanographic survey ships;
(vi) offshore oil drilling rigs and ships servicing them;
(vii) ships of 200 registered net tonnes and under.

Period covered by the statistics

Shipping and cargo statistics are compiled, on a financial year basis, according to the period during which ships actually arrived or departed Australian shores.

Ship characteristics

Ship recording

Ship movement statistics are recorded as 'Ship Number' and 'Ship Calls'. 'Ship Number' relates to the number of overseas direct arrivals to, or departures from Australia. 'Ship Calls' relates to the number of port visits that an overseas ship makes in Australia. For example, an overseas ship which arrives direct in Brisbane and makes a further call in Sydney before departing for an overseas port from Melbourne is counted as one under 'Ship Number' for both arrivals (Brisbane) and departures (Melbourne) and as one arrival call and one departure call for each of the three ports.

Ship type

All ships are classified from *Lloyd's Register of Shipping* according to one of 11 ship types which describe them in terms of their structure or design. These 11 ship types are amalgamated into four broad categories.

Category	*Ship types*
General cargo ships	Container ships Conventional cargo ships Roll on-Roll off ships Other cargo ships
Tankers	Gas carriers Liquid tankers
Bulk carriers	Dry bulk carriers Dry/wet bulk carriers
Other ships	Multi-purpose ships Passenger ships Other ships

Type of service

Ships are also classified according to the type of service they provide. The two types of service for which statistics are shown are:

(*a*) *liner service*, (according to conference and non-conference) relates specifically to a ship which is operated by a carrier providing services on a specified route on a relatively regular basis;

(*b*) *other service*, which refers to all ships operating in other than a liner service.

Conference ships—A 'conference' is an association of shipowners which regulates the freight rates and terms and conditions of carriage of goods in any particular trade. Conferences only operate liner services and not charter services. Conference arrangements normally include provisions for sharing the trade, rationalising sailing schedules and pooling arrangements for resources and revenue.

Country of registration

The country of registration or flag of the ship refers to the country in which the ship is registered according to *Lloyd's Register of Shipping*.

Recording of cargo loaded or discharged

Returns for arrivals show cargo discharged, and returns for departures show cargo loaded, in terms of revenue tonnes and gross weight tonnes. A revenue tonne is the unit of quantity predominantly used in the shipping industry. It is the basis on which freight is charged and may be measured by mass (tonnes) or volume (cubic metres). Revenue tonnes statistics are consequently a mix of mass and volume units and should be used with care. Gross weight is the total weight in tonnes of cargo, excluding the weight of containers, irrespective of the basis on which freight is charged.

Container cargo

Statistics of container cargo refer only to cargo shipped in international containers (including flats but not pallets). To provide a standard measure, all statistics relating to containers are expressed in terms of twenty-foot units. A forty-foot container is therefore recorded as 2 twenty-foot equivalent units (or TEU's).

Country of loading or discharge of overseas cargo

In statistics of overseas shipping and cargo, the country of loading or discharge of overseas cargo is the country of location of the port where the cargo was loaded on to, or is to be discharged from, a reporting ship. The countries shown are not necessarily the countries of origin or ultimate destination of cargo because previous or subsequent transhipments of cargo are not taken into account. The statistics of cargo classified by the country in which it was loaded or discharged cannot therefore be compared directly with statistics of overseas trade classified by country of origin or consignment.

Trade area

Ports at which ships load or discharge cargo are allocated to their respective countries, which are in turn allocated to trade areas in accordance with the Classification of Trade Areas for Cargo Statistics.

It should be noted that a revised trade area classification became effective on 1 July 1984. Care should therefore be taken when comparing trade area statistics for earlier periods with those published using the revised trade area classification.

Units of measurement

The cargo carrying capacity of ships has in the past been measured in terms of registered net tonnage. However, as from 1 July 1979 this statistic has been replaced by deadweight tonnage (DWT).

Deadweight tonnage. A measure of the total mass (weight, in tonnes) of cargo, stores, fuel, passengers and crew carried by the ship when loaded to her maximum summer loadline.

Gross tonnage. A measure of the enclosed internal volume of a ship and its superstructure, with certain spaces exempt, in units of 1 ton per 2.83 cubic metres.

Shipping and Air Cargo Commodity Statistics—SACCS

The scope of the statistics

Inward cargo statistics relate to cargo loaded overseas which is discharged from ships and aircraft at Australian ports and in respect of which Customs import documents have been received. Similarly, outward cargo statistics relate to cargo loaded on ships and aircraft at Australian ports for discharge at overseas ports and in respect of which Customs export documents have been received. Details are not included for: (i) goods imported and exported by parcel post; (ii) direct transit trade, i.e., goods being trans-shipped or moved through Australia for purposes of transport only; (iii) migrants' and passengers' effects for which Customs documents are not required; (iv) certain materials under inter-governmental agreements for defence and similar projects for which Customs documents are not required; (v) ships and aircraft entering and departing Australia under their own power; (vi) to the extent that they can be identified, ships and aircraft purchased for use on overseas routes and any subsequent sales made of such vessels and aircraft; (vii) fish and other sea products landed in Australia and abroad directly from the high seas by Australian ships (such products landed in Australia directly from the high seas by foreign ships are included); (viii) ships and aircraft stores; (ix) export consignments where the value of the goods in each transaction is less than $250, and import entries lodged on informal clearance documents for values not exceeding $250.

Period covered by the statistics

Although both foreign trade statistics and SACCS are compiled from the same source, imports and exports are recorded statistically in the month in which relevant documents are lodged with ACS, whereas SACCS are compiled according to the period during which goods were actually loaded and discharged in Australia.

Commodity classification

Commodities are classified according to the Australian Transport Freight Commodity Classification (ATFCC). The ATFCC is the Australian standard for classifying goods transported by any of the transport modes; sea, rail, road, air or pipeline. It is a four level classification defining commodities in terms of one or more categories of the Standard International Trade Classification (SITC) or the dissection of the SITC categories embodied in the Australian Import and Export Commodity Classification. At the lowest (the fourth) level of classification the ATFCC has 312 items.

Valuation

The recorded value of inward cargo is the free on board (f.o.b.) equivalent of the price when the sale of such cargo is conducted under open market conditions. This is in accordance with the provisions of the General Agreement on Tariffs and Trade (GATT) relating to Customs valuation. The recorded value also includes the value of the outside package, other than international containers used for containerised cargo. As additional factors are also considered in arriving at the transaction value of goods for Customs purposes, the f.o.b. value may not always be the same as the Customs value.

For outward cargo, goods actually sold to overseas buyers prior to shipment are valued at the f.o.b. equivalent of the actual price paid to the exporter. Goods shipped on consignment are valued at the f.o.b. equivalent of the price that would have been paid to the exporter had he actually sold the goods to an importer in the country of final destination. As for inward cargo, the recorded value also includes the value of the outside package, other than international containers used for containerised cargo.

Units of quantity

Gross weight is the total weight in tonnes of cargo, excluding the weight of containers, irrespective of the basis on which freight is charged. Gross weight is not available by commodity for inward cargo.

Australian trading ships

The following table shows particulars of all Australian trading ships of 150 gross tons or more engaged in the regular overseas, interstate or intrastate services at 30 June 1986.

SUMMARY OF THE AUSTRALIAN TRADING FLEET OF SHIPS 150 GROSS TONS OR MORE, 30 JUNE 1986

(*Source:* Department of Transport and Communications)

Ships	*Number*	*DWT*	*Gross Tons*
Intrastate fleet			
Australian owned and registered	22	371,730	253,621
Interstate—			
Australian owned and registered.	34	1,052,130	659,869
Australian owned, overseas registered	2	14,656	8,752
Overseas owned, Australian registered	6	87,623	63,406
Overseas owned and registered	3	100,149	58,773
Interstate fleet	45	1,254,558	790,800
Coastal fleet	*67*	*1,626,288*	*1,044,421*
Overseas—			
Australian owned and registered	18	1,037,996	609,520
Australian owned, overseas registered	1	41,151	29,223
Overseas owned, Australian registered	7	805,135	460,306
Overseas owned and registered	7	307,125	186,381
Overseas fleet	*33*	*2,191,407*	*1,285,430*
Total Australian fleet	**100**	**3,817,695**	**2,329,851**

Ships registered in Australia

The following table shows the number of ships registered in Australia at 30 June 1987.

SHIPS REGISTERED IN AUSTRALIA AS AT 30 JUNE 1987

(*Source:* Department of Transport and Communications)

	Nature of registration					
Location	*Demise chartered (a)*	*Other (b)*	*Government*	*Fishing*	*Pleasure*	*Total*
New South Wales	7	212	1	293	1,294	1,807
Victoria	2	103	12	168	420	705
Queensland	5	208	28	570	767	1,578
Western Australia	2	130	3	379	364	878
South Australia	1	42	7	236	189	475
Tasmania	—	58	4	204	151	417
Northern Territory	1	18	1	78	135	233
Total	**18**	**771**	**56**	**1,928**	**3,320**	**6,093**

(*a*) A Demise chartered ship is a foreign owned ship chartered by way of a charter party to an Australian based operator, who is an Australian national and who under the charter party has whole possession and control of the ship, including the right to appoint the master and crew of the ship. (*b*) Relates to vessels used for commercial purposes.

The following table shows the number and gross tonnage of trading ships of 150 tons or more registered in Australia at 30 June 1986, classified according to year of construction, type of trade in which the ships were engaged, and place of manufacture.

AUSTRALIAN TRADING SHIPS OF 150 GROSS TONS OR MORE BY AREA OF OPERATION, PLACE OF MANUFACTURE AND YEAR OF CONSTRUCTION 30 JUNE 1986

(*Source:* Department of Transport and Communications)

	Area of Operation				*Place of Manufacture*					
	Overseas and interstate ships		*Intrastate ships*		*Ships built in Australian yards*		*Ships built overseas*		*Total ships*	
Year of construction	*No.*	*Gross tons*	*No.*	*Gross tons*	*No.*	*Gross tons*	*No.*	*Gross tons*	*No.*	*Gross tons*
1976 and earlier	39	642,139	10	19,883	27	296,811	22	365,211	49	662,022
1977	9	275,468	1	2,851	3	50,333	7	227,986	10	278,319
1978	7	123,053	1	12,077	1	25,849	7	109,281	8	135,130
1979	5	154,569	—	—	—	—	5	154,569	5	154,569
1980	—	—	1	2,792	—	—	1	2,792	1	2,792
1981	7	263,486	1	1,155	—	—	8	264,641	8	264,641
1982	2	109,761	2	57,345	1	6,310	3	160,796	4	167,106
1983	2	93,693	3	151,423	—	—	5	245,116	5	245,116
1984	3	119,628	—	—	—	—	3	119,628	3	119,628
1985	2	97,317	2	378	2	378	2	97,317	4	97,695
1986	2	197,116	1	5,717	—	—	3	202,833	3	202,833
Registered in Australia	**78**	**2,076,230**	**22**	**253,621**	**34**	**379,681**	**66**	**1,950,170**	**100**	**2,329,851**

Harbour boards and trusts

For detailed information *see* the individual State *Year Books.*

Overseas shipping

Ship movements into and out of Australia

The following table shows the movement of ships and cargo to and from overseas countries, for the years 1980–81 to 1985–86.

OVERSEAS SHIPPING: SHIP AND CARGO MOVEMENTS

	1980–81	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*
Arrivals—						
ship details						
ship number	5,965	5,839	5,516	6,131	6,904	6,824
DWT ('000 tonnes)	236,721	232,370	223,817	263,614	310,228	307,406
cargo discharged						
revenue tonnes ('000)	32,469	31,300	27,904	28,516	29,778	27,600
gross weight ('000 tonnes)	26,756	25,741	23,028	22,859	23,582	22,055
Departures—						
ship details						
ship number	5,884	5,798	5,706	6,025	6,760	6,622
DWT ('000 tonnes)	234,095	235,635	230,396	267,264	309,152	304,839
cargo loaded						
revenue tonnes ('000)	179,280	176,449	170,429	198,406	225,119	237,446
gross weight ('000 tonnes)	178,381	175,634	169,483	197,041	224,182	234,688

The following table shows particulars of overseas shipping which arrived at or departed from Australian ports according to the country of registration of ships.

OVERSEAS SHIPPING: SHIP DEPARTURES AND ARRIVALS BY COUNTRY OF REGISTRATION, 1985–86

	Departures		*Arrivals*	
Country of registration	*Ship number*	*DWT ('000 tonnes)*	*Ship number*	*DWT ('000 tonnes)*
Australia	215	10,923	219	11,677
China—excl. Taiwan	349	14,137	352	14,428
—Taiwan	141	10,848	146	10,864
Denmark	83	1,398	84	1,306
Germany, Federal Republic of	147	2,793	167	3,114
Greece	294	12,578	284	12,206
Hong Kong	239	12,046	269	12,943
India	67	2,209	70	2,355
Japan	1,386	102,496	1,417	101,817
Korea, Republic of	266	19,963	273	20,178
Liberia	475	24,469	480	24,469
Malaysia	88	2,590	90	2,699
Netherlands	112	1,521	121	1,727
New Zealand	113	1,791	157	2,389
Norway	102	5,673	103	5,498
Panama	959	26,746	976	27,150
Philippines	258	10,367	259	10,436
Singapore, Republic of	186	7,179	198	7,232
Sweden	23	853	20	869
United Kingdom	340	13,286	359	13,581
United States of America	8	191	10	239
U.S.S.R.	182	3,485	178	3,421
Other countries	589	17,295	592	16,811
Total all countries	**6,622**	**304,839**	**6,824**	**307,406**
With cargo	*6,041*	*289,039*	*2,527*	*59,162*
In ballast	*581*	*15,800*	*4,297*	*248,244*

Overseas cargo according to country of registration of ships

The following table shows total overseas cargo, loaded and discharged, according to the country in which the ships were registered.

OVERSEAS CARGO LOADED AND DISCHARGED BY COUNTRY OF REGISTRATION OF SHIPS

('000 revenue tonnes)

	1983–84		*1984–85*		*1985–86*	
Country of registration	*Loaded*	*Discharged*	*Loaded*	*Discharged*	*Loaded*	*Discharged*
Australia	7,855	2,158	6,875	2,310	7,993	2,177
China—excl. Taiwan	5,606	531	8,267	376	10,511	373
—Taiwan	5,164	107	7,352	108	10,000	183
Denmark	840	443	835	355	947	396
Germany, Federal Republic of	1,116	1,102	1,584	1,343	1,206	1,040
Greece	10,173	1,598	12,282	1,253	10,318	1,288
Hong Kong	6,316	960	7,059	873	9,513	628
India	1,160	235	868	114	1,744	50
Japan	79,897	3,032	83,926	3,761	88,694	4,042
Korea, Republic of	9,321	433	12,312	330	15,773	747
Liberia	18,613	3,801	24,155	4,300	17,721	2,671
Malaysia	1,893	343	1,864	376	1,942	381
Netherlands	1,168	401	1,223	294	784	294
New Zealand	589	710	530	849	780	1,112
Norway	4,862	1,319	5,768	1,294	3,939	888
Panama	16,151	2,562	18,356	2,720	20,819	3,245
Philippines	3,101	358	5,647	789	8,753	811
Singapore, Republic of	3,667	699	4,701	847	5,534	1,242
Sweden	483	425	606	353	240	229
United Kingdom	7,602	3,836	7,237	4,130	6,264	3,873
United States of America	—	—	51	—	100	14
U.S.S.R.	1,408	382	1,797	409	2,359	412
Other countries	11,427	3,081	11,823	2,593	11,513	1,504
Total all ships	**198,414**	**28,516**	**225,119**	**29,778**	**237,446**	**27,600**

Shipping at principal ports

The following two tables show the movement of overseas shipping and cargo at Australian ports during 1985–86. The first provides details of the ships calling at Australian ports and the gross weight of cargo loaded and discharged. The second classifies cargo loaded and discharged in terms of whether or not it was transported in ISO containers.

OVERSEAS SHIP AND CARGO MOVEMENTS AT AUSTRALIAN PORTS, 1985–86

	Departures		*Cargo loaded*	*Arrivals*		*Cargo discharged*
	Ship details			*Ship details*		
Australian port	*Ship calls*	*DWT ('000 tonnes)*	*Gross weight ('000 tonnes)*	*Ship calls*	*DWT ('000 tonnes)*	*Gross weight ('000 tonnes)*
New South Wales—						
Sydney	1,354	35,167	7,913	1,379	35,713	2,474
Botany Bay	533	11,878	586	567	12,736	1,762
Newcastle	742	37,746	28,306	725	36,250	1,249
Port Kembla	226	11,463	8,488	229	11,329	410
Other	57	1,145	863	55	1,146	3
Total	*2,912*	*97,400*	*46,157*	*2,955*	*97,174*	*5,898*
Victoria—						
Melbourne	1,483	28,587	2,475	1,481	28,571	3,164
Geelong	313	8,706	2,872	320	8,832	1,554
Westernport	119	6,818	4,058	120	6,877	134
Other	112	3,741	1,461	113	3,812	209
Total	*2,027*	*47,853*	*10,867*	*2,034*	*48,091*	*5,060*
Queensland—						
Brisbane	935	19,136	4,979	941	19,092	1,246
Gladstone	335	21,091	15,653	335	20,947	718
Hay Point	411	33,467	27,989	412	33,312	—
Townsville	224	4,843	1,512	225	4,889	286
Weipa	94	3,518	2,534	95	3,581	48
Other	408	10,640	7,768	403	10,403	160
Total	*2,407*	*92,695*	*60,435*	*2,411*	*92,224*	*2,458*
South Australia—						
Port Adelaide	465	10,225	1,536	456	9,972	504
Port Lincoln	85	2,109	740	81	2,041	59
Port Pirie	97	1,899	893	97	1,906	33
Port Stanvac	37	1,973	318	34	1,696	787
Thevenard	32	656	221	32	656	—
Whyalla	52	1,386	526	52	1,482	203
Other	81	2,797	1,274	81	2,797	58
Total	*849*	*21,044*	*5,509*	*833*	*20,550*	*1,644*
Western Australia—						
Fremantle	976	24,232	6,992	988	24,775	2,813
Bunbury	188	6,100	3,652	184	5,898	586
Cape Cuvier	7	374	365	7	374	—
Dampier	463	43,120	37,968	462	43,187	216
Geraldton	164	4,405	1,943	160	4,311	99
Port Hedland	434	35,442	29,361	449	36,555	144
Port Walcott	100	15,378	14,008	96	14,563	—
Yampi Sound	26	2,436	2,220	25	2,298	—
Other	226	5,744	3,012	229	5,807	245
Total	*2,584*	*137,230*	*99,520*	*2,600*	*137,768*	*4,103*
Tasmania—						
Hobart	183	3,904	869	181	3,862	237
Launceston	148	4,447	1,881	147	4,455	102
Port Latta	24	1,915	1,815	23	1,850	27
Other	136	2,873	423	134	2,867	64
Total	*491*	*13,139*	*4,989*	*485*	*13,034*	*430*
Northern Territory—						
Darwin	110	1,642	37	116	1,846	531
Other	198	6,926	4,994	193	6,722	575
Total	*308*	*8,568*	*5,031*	*309*	*8,568*	*1,106*
Port not available for publication	—	—	1,975	—	—	1,336
Total all ports	**11,578**	**417,929**	**234,482**	**11,627**	**417,410**	**22,036**

OVERSEAS CONTAINER AND NON-CONTAINER CARGO LOADED AND DISCHARGED AT AUSTRALIAN PORTS, 1985–86

('000 revenue tonnes)

	Loaded			*Discharged*		
Australian port	*Container cargo*	*Other cargo*	*Total*	*Container cargo*	*Other cargo*	*Total*
New South Wales—						
Sydney	680	7,338	8,018	1,490	2,337	3,827
Botany Bay	464	169	633	1,588	873	2,462
Newcastle	231	28,440	28,671	12	1,242	1,254
Port Kembla	1	8,490	8,491	—	415	415
Other	—	863	864	—	5	5
Total	*1,376*	*45,299*	*46,676*	*3,090*	*4,872*	*7,963*
Victoria—						
Melbourne	1,973	774	2,747	2,921	1,736	4,657
Geelong	82	2,809	2,890	26	1,548	1,574
Westernport	—	4,058	4,058	—	134	134
Other	—	1,468	1,468	—	210	210
Total	*2,055*	*9,108*	*11,163*	*2,947*	*3,628*	*6,575*
Queensland—						
Brisbane	675	4,378	5,053	439	1,446	1,885
Gladstone	—	15,693	15,693	3	716	718
Hay Point	—	28,076	28,076	—	—	—
Townsville	22	1,503	1,524	4	358	362
Weipa	—	2,534	2,534	—	51	51
Other	11	7,773	7,783	4	156	160
Total	*707*	*59,957*	*60,665*	*449*	*2,726*	*3,176*
South Australia—						
Port Adelaide	234	1,344	1,579	95	847	942
Port Lincoln	—	740	740	—	59	59
Port Pirie	—	893	893	1	32	33
Port Stanvac	—	318	318	—	787	787
Thevenard	—	221	221	—	—	—
Whyalla	—	545	545	—	203	203
Other	—	1,301	1,301	—	58	58
Total	*235*	*5,361*	*5,596*	*96*	*1,986*	*2,082*
Western Australia—						
Fremantle	652	6,468	7,120	593	2,620	3,213
Bunbury	—	3,652	3,652	—	587	587
Cape Cuvier	—	365	365	—	—	—
Dampier	—	38,206	38,206	4	219	223
Geraldton	—	2,056	2,056	—	112	112
Port Hedland	—	30,133	30,133	1	148	148
Port Walcott	—	14,008	14,008	—	—	—
Yampi Sound	—	2,220	2,220	—	—	—
Other	4	3,008	3,012	4	249	253
Total	*656*	*100,115*	*100,771*	*601*	*3,935*	*4,536*
Tasmania—						
Hobart	51	854	906	2	261	263
Launceston	34	1,891	1,925	4	105	109
Port Latta	—	1,815	1,815	—	27	27
Other	115	310	425	25	40	65
Total	*200*	*4,871*	*5,071*	*31*	*432*	*464*
Northern Territory—						
Darwin	5	34	40	8	568	576
Other	—	5,138	5,138	—	644	644
Total	*5*	*5,173*	*5,178*	*8*	*1,213*	*1,221*
Port not available for publication	608	1,508	2,116	621	935	1,556
Total all ports	**5,843**	**231,393**	**237,236**	**7,845**	**19,728**	**27,572**

Overseas cargo according to trade area and ship type

The following table shows details of cargo loaded in Australia for discharge overseas, and cargo discharged in Australia from overseas, classified according to the various trade areas of the world and by ship type.

OVERSEAS CARGO BY TRADE AREA OF PORT OF DISCHARGE/LOADING BY SHIP TYPE, 1985–86

('000 revenue tonnes)

Trade area	*General cargo ships*	*Tankers*	*Bulk carriers*	*Other ships*	*All ships*
	— Outward cargo —				
Europe	1,119	115	39,746	40	41,020
East Asia	1,178	318	25,925	301	27,722
Japan and North Asia	3,118	2,382	120,745	4	126,249
North America—E. Coast	361	397	2,922	176	3,856
North America—W. Coast	563	825	3,680	7	5,075
Central America and Caribbean	22	26	114	—	163
South America—E. Coast	42	—	1,079	—	1,121
South America—W. Coast	29	—	265	—	294
Africa—Mediterranean	8	—	2,412	—	2,419
West Africa	4	—	132	—	136
South and East Africa	100	37	345	—	482
Red Sea and Mediterranean Middle East	195	14	4,061	—	4,270
Middle East Gulf	188	140	4,436	—	4,764
West India	151	125	3,071	—	3,347
East India	66	29	1,047	—	1,142
South East Asia	1,300	647	3,607	9	5,562
New Zealand	787	573	755	2	2,116
Papua New Guinea and Solomon Islands	457	472	664	2	1,596
Pacific Islands and other countries	198	389	176	2	765
Trade area not specified	—	—	—	—	—
Trade area not available for publication	159	—	4,980	—	5,138
Total outward overseas cargo	**10,042**	**6,489**	**220,163**	**543**	**237,236**
	—Inward cargo—				
Europe	2,511	539	289	121	3,460
East Asia	1,138	80	284	29	1,532
Japan and North Asia	2,608	248	3,265	44	6,165
North America—E. Coast	687	658	613	10	1,969
North America—W. Coast	872	376	1,759	—	3,007
Central America and Caribbean	1	6	—	—	7
South America—E. Coast	91	8	63	—	161
South America—W. Coast	14		9	—	23
Africa—Mediterranean	8	—	—	—	8
West Africa	7	—	120	—	127
South and East Africa	137	—	51	—	189
Red Sea and Mediterranean Middle East	68	499	142	—	709
Middle East Gulf	12	3,538	484	—	4,034
West India	57	90			147
East India	9				9
South East Asia	734	1,864	741	9	3,348
New Zealand	879	470	207	—	1,556
Papua New Guinea and Solomon Islands	66	5	2	—	73
Pacific Islands and other countries	75	9	959	6	1,049
Trade area not specified	—	—	—	—	—
Trade area not available for publication	—	—	—	—	—
Total inward overseas cargo	**9,975**	**8,389**	**8,988**	**220**	**27,572**

Overseas cargo according to trade area and type of service

The following table shows details of cargo loaded in Australia for discharge overseas, and cargo discharged in Australia from overseas, classified according to the various trade areas of the world and by type of shipping service.

OVERSEAS CARGO LOADED AND DISCHARGED IN AUSTRALIA BY TRADE AREA OF PORT OF DISCHARGE/LOADING BY TYPE OF SERVICE, 1985–86

('000 revenue tonnes)

	Outward overseas cargo			*Inward overseas cargo*		
	Liner service			*Liner service*		
Trade area	*Conference*	*Non-conference*	*Other ships*	*Conference*	*Non-conference*	*Other ships*
Europe	723	252	40,045	1,688	473	1,299
East Asia	408	444	26,871	393	658	481
Japan and North Asia	1,048	570	124,631	1,148	247	4,770
North America—E. Coast	233	333	3,290	435	102	1,432
North America—W. Coast	287	395	4,392	326	717	1,964
Central America and Caribbean	13	3	147	—	—	7
South America—E. Coast	—	23	1,098	—	68	93
South America—W. Coast	—	—	293	—	9	14
Africa-Mediterranean	—	—	2,419	—	—	8
West Africa	—	—	136	—	—	127
South and East Africa	17	42	423	4	73	112
Red Sea and Mediterranean Middle East	98	66	4,105	2	49	659
Middle East Gulf	63	18	4,683	7	4	4,023
West India	89	59	3,199	45	9	94
East India	57	1	1,084	9	—	—
South East Asia	746	213	4,604	502	156	2,690
New Zealand	134	485	1,497	146	645	766
Papua New Guinea and Solomon Islands	306	58	1,232	43	8	22
Pacific Islands and other countries	116	47	602	30	18	1,000
Trade area not specified	—	—	—	—	—	19
Trade area not available for publication	—	—	5,138	—	—	—
Total overseas cargo	**4,337**	**3,009**	**229,890**	**4,778**	**3,233**	**19,580**

Overseas cargo commodity details

The following three tables classify inward and outward overseas cargo according to the Australian Transport Freight Commodity Classification (ATFCC). The second and third tables also provide details of the type of shipping service by which cargo was transported.

INWARD AND OUTWARD OVERSEAS CARGO: SEA: BY SELECTED COMMODITIES
1985–86
($'000)

ATFCC Division	*Title*	*Inward cargo*	*Outward cargo*
00	Live animals	84	203,690
01	Meat and meat preparations	13,865	1,633,648
02	Dairy products and eggs	75,718	439,196
03	Fish, crustaceans and molluscs and preparations thereof	311,182	427,855
04	Cereals and cereal preparations *(b)*	67,488	3,757,215
05	Fruit and vegetables; sugar cane *(a)*	253,467	322,465
06	Sugar, sugar preparations and honey *(b)*	22,381	647,166
09	Coffee, tea, cocoa, spices, margarine and miscellaneous edible products and preparations *(a) (b)*	408,090	84,950
11	Beverages, tobacco and manufactures *(b)*	289,887	43,646
21	Hides, skins and furskins, raw *(b)*	2,025	388,544
24	Wood, timber and cork *(b)*	327,739	15,106
25	Pulp and waste paper	103,776	14,461
26	Textile fibres (not wool tops) and wastes (not manufactured into yarn or fabric)	133,304	3,131,099
27	Crude fertilizers and minerals (excluding coal, petroleum and precious stones) *(b)*	251,769	127,775
28	Metalliferous ores and metal scrap *(b)*	25,175	2,959,124
32	Coal, coke and briquettes	2,984	5,209,248
33	Petroleum, petroleum products and related materials *(a)*	1,743,283	1,787,088
51	Organic and inorganic chemicals *(a) (b)*	803,986	68,356
53	Dyeing, tanning and colouring materials *(b)*	131,427	28,100
54	Medicinal and pharmaceutical products *(b)*	214,426	37,986
55	Essential oils, perfume materials, toilet polishing and cleaning preparations *(a)*	173,189	48,922
56	Fertilizers, manufactured	142,642	2,159
58	Plastic materials, artificial resins and cellulose esters and ethers *(a) (b)*	550,575	41,285
59	Explosives and other chemical materials and products *(a) (b)*	372,619	56,492
62	Rubber manufactures, n.e.s.	418,497	17,288
63	Cork and wood manufactueres (excluding furniture) *(a) (b)*	156,968	4,494
64	Paper, paperboard and articles of paper pulp, of paper or of paperboard *(a)*	805,299	69,893
65	Textile yarns, fabrics, made-up articles, n.e.s. and related products *(a) (b)*	1,506,951	48,223
66	Non-metallic mineral manufactures, n.e.s. *(a) (b)*	510,081	50,491
67	Iron and steel *(a) (b)*	563,803	507,935
68	Non-ferrous metals *(a) (b)*	121,548	695,659
69	Manufactures of metal, n.e.s. *(a)*	803,229	146,403
71	Machinery, equipment, apparatus and appliances *(a) (b)*	7,113,306	598,563
78	Road vehicles and other transport equipment	3,761,636	258,336
82	Furniture and parts thereof	228,379	17,965
84	Articles of apparel and clothing accessories and footwear	590,622	9,886
87	Professional, scientific and controlling apparatus, n.e.s.; photographic apparatus, equipment and supplies; optical goods, n.e.s.; watches and clocks *(a)*	649,663	117,859
89	Printed matter, plastic wares, toys and other miscellaneous manufactured articles *(a) (b)*	1,616,604	103,736
93	Special transactions and commodities not classified by kind	1,249,834	325,400
99	Coins, n.e.s. temporary ships/structures; (includes confidential commodities *(c)*	806,759	4,425,747
	Other	357,005	401,303
	Total all commodities	**27,681,265**	**29,274,757**

(a) Excludes import commodities regarded as confidential. These items are included in Division 99. *(b)* Excludes export commodities regarded as confidential. These items are included in Division 99. *(c)* Includes commodities regarded as confidential.

INWARD OVERSEAS CARGO: SEA: BY COMMODITY BY TYPE OF SERVICE
($'000)

ATFCC Section and title	Year ended 30 June	Liner Service		Other	Total
		Conference	Non-conference		
0 Food and live animals (a)	1985	609,123	315,646	120,416	1,045,186
	1986	752,781	310,869	126,050	1,189,700
1 Beverages and tobacco	1985	133,391	63,336	27,866	224,594
	1986	162,016	90,991	36,880	289,887
2 Crude materials, inedible, except fuels (a)	1985	306,421	253,657	342,277	902,355
	1986	337,118	305,606	345,192	987,915
3 Mineral fuels, lubricants and related materials (a)	1985	15,454	11,288	2,285,551	2,312,293
	1986	22,125	16,816	1,707,634	1,746,575
4 Animal and vegetable oils, fats and waxes (a)	1985	35,984	15,079	59,990	111,052
	1986	31,399	8,686	50,656	90,741
5 Chemical and related products, n.e.s. (a)	1985	841,765	512,234	531,073	1,885,072
	1986	1,130,930	628,311	629,621	2,388,863
6 Manufactured goods classified chiefly by material (a)	1985	2,452,237	1,086,178	801,050	4,339,464
	1986	2,755,513	1,354,252	850,254	4,960,019
7 Machinery and transport equipment (a)	1985	4,393,232	1,330,701	2,958,873	8,682,806
	1986	5,526,850	1,861,316	3,486,775	10,874,942
8 Miscellaneous manufactured articles (a)	1985	1,532,774	842,787	256,236	2,631,796
	1986	1,872,010	961,890	251,369	3,085,268
9 Commodities and transactions, n.e.s. (includes confidential commodities) (b)	1985	1,069,906	368,102	561,867	1,999,874
	1986	1,045,398	349,806	672,150	2,067,354
Total all commodities	**1985**	**11,390,286**	**4,799,008**	**7,945,198**	**24,134,493**
	1986	**13,636,141**	**5,888,544**	**8,156,581**	**27,681,265**

(a) Excludes commodities regarded as confidential. These items are included in Section 9. (b) Includes commodities regarded as confidential.

OUTWARD OVERSEAS CARGO: SEA: BY COMMODITY BY TYPE OF SERVICE
($'000)

ATFCC Section and title	Year ended 30 June	Liner Service		Other	Total
		Conference	Non-conference		
0 Food and live animals (a)	1985	2,264,696	357,359	4,767,703	7,389,760
	1986	2,304,446	499,759	4,847,139	7,651,344
1 Beverages and tobacco (a)	1985	25,841	8,348	3,725	37,914
	1986	27,073	11,665	4,908	43,646
2 Crude materials, inedible, except fuels (a)	1985	2,613,302	819,704	2,733,718	6,166,724
	1986	2,488,206	1,135,051	3,118,662	6,741,919
3 Mineral fuels, lubricants and related materials (a)	1985	62,572	13,418	6,328,438	6,404,428
	1986	28,779	11,375	6,956,182	6,996,336
4 Animal and vegetable oils, fats and waxes (a)	1985	18,703	15,508	65,332	99,544
	1986	18,516	13,364	46,900	78,779
5 Chemical and related products, n.e.s. (a)	1985	131,189	84,378	51,931	267,498
	1986	132,293	100,904	50,103	283,299
6 Manufactured goods classified chiefly by material (a)	1985	575,283	329,509	693,744	1,598,535
	1986	514,531	435,512	671,719	1,621,762
7 Machinery and transport equipment (a)	1985	473,318	269,844	121,869	865,030
	1986	520,913	241,784	94,202	856,899
8 Miscellaneous manufactured articles (a)	1985	148,388	53,567	18,293	220,249
	1986	155,503	70,400	23,543	249,446
9 Commodities and transactions, n.e.s. (includes confidential commodities) (b)	1985	987,536	311,888	3,149,902	4,449,324
	1986	937,156	482,645	3,331,526	5,301,547
Total all commodities	**1985**	**7,300,828**	**2,263,523**	**17,934,653**	**27,499,005**
	1986	**7,127,414**	**3,002,458**	**19,144,884**	**29,274,757**

(a) Excludes commodities regarded as confidential. These items are included in Section 9. (b) Includes commodities regarded as confidential.

Coastal shipping cargo

The following table shows the gross weight of cargo loaded at an Australian port for discharge at another Australian port. Both inter- and intrastate cargo movements are included. Cargo loaded at, or to be discharged at, an overseas port is excluded.

COASTAL CARGO LOADED AND DISCHARGED AT AUSTRALIAN PORTS, 1985–86

('000 gross weight tonnes)

(*Source:* Department of Transport and Communications)

	Loaded			*Discharged*		
Australian port	*Interstate*	*Intrastate*	*Total*	*Interstate*	*Intrastate*	*Total*
New South Wales—						
Port Jackson	194	1	195	3,426	1,156	4,582
Botany Bay	632	299	931	4,175	—	4,175
Newcastle	446	56	502	4,157	437	4,594
Port Kembla	2,027	428	2,455	5,913	35	5,948
Other	—	1,136	1,136	11	213	224
Total	*3,299*	*1,920*	*5,219*	*17,682*	*1,841*	*19,523*
Victoria—						
Melbourne	1,195	—	1,195	1,643	—	1,643
Geelong	1,329	99	1,428	483	1	484
Westernport	8,900	1	8,901	666	—	666
Other	3	174	177	10	140	150
Total	*11,427*	*274*	*11,701*	*2,802*	*141*	*2,943*
Queensland—						
Brisbane	1,018	1,134	2,152	4,077	467	4,544
Gladstone	786	394	1,180	126	5,590	5,716
Hay Point	36	—	36	—	—	—
Mackay	66	2	68	72	314	386
Townsville	53	9	62	247	204	451
Weipa	—	5,317	5,317	—	27	27
Other	614	97	711	47	603	650
Total	*2,573*	*6,953*	*9,526*	*4,569*	*7,205*	*11,774*
South Australia—						
Adelaide	483	83	566	523	1,054	1,577
Port Pirie	126	—	126	204	30	234
Port Stanvac	425	—	425	854	482	1,336
Whyalla	481	20	501	1,208	160	1,368
Other	2,129	1,999	4,128	113	108	221
Total	*3,644*	*2,102*	*5,746*	*2,902*	*1,834*	*4,736*
Western Australia—						
Fremantle	665	744	1,409	2,261	583	2,844
Bunbury	434	—	434	9	115	124
Dampier	344	—	344	—	—	—
Port Hedland	5,150	13	5,163	—	126	126
Port Walcott	133	—	133	—	28	28
Yampi Sound	1,556	3	1,559	—	17	17
Other	680	402	1,082	15	417	432
Total	*8,962*	*1,162*	*10,124*	*2,285*	*1,286*	*3,571*
Tasmania—						
Hobart	464	61	525	1,123	169	1,292
Burnie	408	182	590	411	58	469
Devonport	482	—	482	408	1	409
Launceston	269	13	282	1,077	4	1,081
Other	70	20	90	49	30	79
Total	*1,693*	*276*	*1,969*	*3,068*	*262*	*3,330*
Northern Territory—						
Darwin	6	10	16	175	8	183
Other	403	5	408	11	23	34
Total	*409*	*15*	*424*	*186*	*31*	*217*
Total all ports	**32,007**	**12,702**	**44,709**	**33,494**	**12,600**	**46,094**

RAILWAYS

Government railways

The six government owned railway systems are operated by the State Rail Authority of New South Wales (SRA), 'V/Line' operated by the State Transport Authority of Victoria, Queensland Government Railways (QR), Western Australian Government Railways Commission (WAGRC), the State Transport Authority of South Australia (STA), and the Australian National Railways Commission (ANRC).

Data contained in the following tables have been compiled from a number of sources. These sources include annual reports of the various rail authorities; data supplied by the Rail Industry Council; and data collected directly by the Australian Bureau of Statistics.

As the Australian National system includes routes in more than one State, and the Victorian system extends into New South Wales, the system route-kilometres shown in the following table do not represent route-kilometres within each State and Territory.

GOVERNMENT RAILWAYS: ROUTE-KILOMETRES OPEN, BY SYSTEM

(kilometres)

30 June—	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Australian National*	*Total*
1981	9,773	5,870	9,932	140	5,773	7,648	39,136
1982	9,773	5,812	9,970	141	5,609	7,638	38,943
1983	9,883	5,815	9,979	131	5,610	7,647	39,065
1984	9,884	5,783	10,381	130	5,623	7,450	39,251
1985	9,908	5,748	10,231	131	5,563	7,465	39,046
1986	9,909	5,714	10,124	127	5,553	7,333	38,760

Summary of operations

Particulars of train-kilometres, passenger journeys, freight-tonnes carried, and freight tonne-kilometres included in this section refer only to operations for which revenue is received.

GOVERNMENT RAILWAYS: SUMMARY OF OPERATIONS, SYSTEMS, 1985–86

	N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Australian National*	*Aust.*
Train-kilometres ('000) *(a) (b)*—							
Suburban passenger . . .	25,635	14,200	5,322	n.a.	2,348	—	n.a.
Country passenger . . .	15,598	7,857	3,791	—	3 362	2,406	33,014
Goods *(b)*	30,778	7,752	26,003	—	4,654	8,107	77,294
Total	**72,011**	**29,809**	**35,116**	**n.a.**	**10,364**	**10,513**	**n.a.**
Passenger journeys ('000) *(c)*—							
Suburban	214,875	89,300	40,246	12,899	9,742	—	367,062
Country *(d)*.	3,706	4,963	1,258	—	209	322	10,458
Total	**218,581**	**94,263**	**41,504**	**12,899**	**9,951**	**322**	**377,520**
Freight—							
Tonnes carried— ('000) *(d)*	53,800	10,516	73,599	—	20,877	13,049	171,841
Net tonne-kilometres— (million) *(e)*	13,740	3,094	20,450	—	3,992	7,081	48,357

(*a*) One train (i.e. a complete unit of locomotive and vehicles, electric train set, or rail motor) travelling one kilometre for revenue purposes. (*b*) Includes mixed train-kilometres. (*c*) Based on ticket sales making allowances for periodical tickets. Tickets sold at concession rates are counted as full journeys. (*d*) Inter-system traffic is included in the total for each system over which it passes. (*e*) One tonne carried one kilometre.

GOVERNMENT RAILWAYS: TRAIN-KILOMETRES (a)
('000 kilometres)

Year	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Australian National*	*Aust.*
1980–81	58,089	30,615	31,282	3,879	10,891	12,376	147,132
1981–82	59,960	31,136	32,696	3,921	10,681	12,089	150,482
1982–83	61,507	30,166	30,885	3,894	10,560	10,795	147,806
1983–84	61,659	30,702	33,303	3,697	10,333	10,238	149,932
1984–85	66,025	30,794	34,293	n.a.	11,098	11,306	n.a.
1985–86	72,011	29,809	35,116	n.a.	10,364	10,513	n.a.

(*a*) One train (i.e. a complete unit of locomotive and vehicles, electric train set, or rail motor) travelling one kilometre for revenue purposes.

GOVERNMENT RAILWAYS: FREIGHT CARRIED, NET TONNE–KILOMETRES, AND FREIGHT EARNINGS, SYSTEMS

Year	*N.S.W.*	*Vic.*	*Qld*	*W.A.*	*Australian National*	*Aust.*
			FREIGHT CARRIED ('000 tonnes)			
1980–81	40,440	12,721	41,504	20,271	12,345	127,281
1981–82	40,393	11,623	43,659	19,776	11,882	127,333
1982–83	41,350	8,570	43,706	19,791	10,676	124,093
1983–84	46,594	10,486	53,150	19,870	12,083	142,183
1984–85	47,800	11,892	65,452	22,085	12,870	160,099
1985–86	53,800	10,516	73,599	20,877	13,049	171,841
			NET TONNE–KILOMETRES (million)			
1980–81	10,543	3,704	11,982	4,489	5,751	36,468
1981–82	10,705	3,427	13,079	4,390	5,731	37,332
1982–83	9,117	2,468	13,177	4,384	5,348	34,494
1983–84	11,131	3,111	15,391	3,903	5,912	39,448
1984–85	12,393	3,543	18,438	4,337	6,270	44,981
1985–86	13,740	3,094	20,450	3,992	7,081	48,357
			FREIGHT EARNINGS ($'000)			
1980–81	364,406	140,187	383,695	148,422	150,205	1,186,915
1981–82	431,157	137,676	481,193	175,054	165,214	1,390,294
1982–83	452,626	108,803	508,223	183,632	161,480	1,414,764
1983–84	559,876	160,841	669,362	180,439	192,223	1,762,741
1984–85	641,100	182,259	828,926	209,627	213,698	2,075,610
1985–86	736,795	168,641	905,494	200,974	237,345	2,249,249

GOVERNMENT RAILWAYS: GROSS EARNINGS, SYSTEMS
($ million)
(*Source*: Rail Industry Council)

Year	*N.S.W.*	*Vic. (a)*	*Qld*	*S.A.(b)*	*W.A.*	*Australian National(c)*	*Aust.*
1980–81	559.6	256.3	416.8	4.5	184.6	181,4	1,603.2
1981–82	663.2	260.2	520.3	5.7	216.3	195.3	1,861.0
1982–83	694.8	248.1	549.9	6.3	229.4	193.9	1,922.4
1983–84	823.1	301.7	718.0	8.1	233.0	227.1	2,311.0
1984–85	938.6	351.5	882.5	10.7	263.6	252.5	2,699.4
1985–86	1,082.4	335.0	966.0	14.6	262.0	283.3	2,943.3

(*a*) Includes Metrail for years 1983–84 to 1985–86. (*b*) Includes urban rail operations only. (*c*) Includes Tasmania.

Non-government railways

The Australian non-government railways covered in this section are those which operate outside industrial estates, harbour precincts, mines and quarries with a route distance exceeding two kilometres.

The figures in the following table have been compiled from information supplied to the Bureau of Transport Economics (BTE) by the various railway operators. All operators provided details of tonnes carried and most provided details of tonne-kilometres performed. In a few cases, the tonne-kilometre figures have been estimated by the BTE using the advised average length of haul.

TRAFFIC TASK PERFORMED BY AUSTRALIAN NON-GOVERNMENT RAILWAYS

Year	*Iron ore railways*	*Sugar tramways*	*Coal railways (a)*	*Other non-government railways*	*Total(a)*
TONNES CARRIED (million)					
1980–81	88.5	20.6	8.1	11.4	128.6
1981–82	83.0	21.6	8.7	12.2	125.6
1982–83	78.2	20.9	7.1	8.0	114.1
1983–84	71.5	21.6	7.0	10.9	111.0
1984–85	86.9	24.0	7.9	11.1	129.9
1985–86	86.8	21.6	8.1	10.3	126.8
TONNE-KILOMETRES (million)					
1980–81	28,264	351	97	222	28,934
1981–82	26,669	367	104	244	27,384
1982–83	24,432	355	86	171	25,045
1983–84	22,646	366	85	226	23,324
1984–85	27,649	408	98	223	28,378
1985–86	28,517	368	116	201	29,202

(a) Includes transfers to and from Government railways.

TRAM, BUS, AND FERRY SERVICES

Trams

At 30 June 1986, tram services were in operation in Melbourne and in Adelaide. Regular tram services ceased to operate in Ballarat on 19 September 1971 and in Bendigo on 16 April 1972. However, services are operated in both cities, on an irregular basis, but generally during holiday periods, as a tourist attraction.

In many parts of Australia, private lines used for special purposes in connection with the timber, mining, sugar, or other industries are often called tramways, but they are more properly railways, and the traffic on them has nothing in common with that of the street tram used for the conveyance of passengers.

Buses

Services are operated by government or municipal authorities and private operators. Statistics are collected for government and municipal bus services which are located in all capital cities and Newcastle, New South Wales; Rockhampton, Queensland; Launceston and Burnie, Tasmania; and for country road services operated by the Victorian Railways, the State Rail Authority of New South Wales, the Western Australian Government Railways, and the Australian National Railways.

Ferries

Ferry passenger services are operated in the following States: New South Wales, at Sydney, Newcastle and various other waterways; Western Australia, on the Swan River at Perth; Tasmania, on the Mersey River at Devonport and on the Derwent River at Hobart; and Queensland, on the Brisbane River at Brisbane. Control is exercised by both government authorities and private operators.

Government and municipal tram and bus services

Because of the development in recent years of the various forms of public road transport under the control of single authorities and the gradual replacement of tram services by bus services, it is not possible to obtain separate statistics for all phases of the activities of each form of transport, particularly financial operations.

TRAM AND BUS SERVICES: GOVERNMENT AND MUNICIPAL, STATES AND TERRITORIES, 1985–86

	N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.(a)*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Route-kilometres at 30 June									
Tram (kilometres)	..	329	..	11	..	..	..	..	340
Bus (kilometres)	1,234	n.a.	798	1,022	8,455	483	233	1,540	n.a.
Vehicle-kilometres									
Tram ('000)	..	24,000	..	778	..	..	..	..	24,778
Bus ('000)	66,314	51,000	25,339	38,899	(*b*)47,155	9,775	1,949	15,322	255,753
Rolling stock at 30 June									
Tram (number)	..	642	..	21	..	..	..	..	663
Bus (number)	1,708	1,265	593	745	906	272	38	391	5,918
Passenger journeys									
Tram ('000)	..	112,400	..	2,711	..	..	..	..	115,111
Bus ('000)	190,308	84,900	42,811	51,517	(*b*)50,584	14,717	2,144	23,300	460,281
Gross revenue (*c*)									
Tram and bus ($'000)	145,078	n.a.	30,624	41,403	50,256	6,664	1,345	14,054	n.a.
Working expenses (*d*)									
Tram and bus ($'000)	227,118	n.a.	57,394	102,164	80,460	19,880	4,316	30,090	n.a.
Net revenue									
Tram and bus ($'000)	−82,040	n.a.	−26,770	−60,761	−30,204	−13,216	−2,971	−16,036	n.a.
Employees at 30 June									
Tram and bus (number)	6,134	n.a.	1,509	(*e*)1,549	2,247	567	105	810	n.a.

(*a*) Excludes operations of Eastern Goldfields Transport Board. (*b*) Scheduled services (including clipper) only. (*c*) Excludes government grants. (*d*) Includes provision of reserves for depreciation, etc., where possible. Minus sign (−) denotes deficit. (*e*) Bus and tram crew only.

TRAM AND BUS SERVICES: GOVERNMENT AND MUNICIPAL

	1980–81	*1981–82*	*1982–83*	*1983–84*	*1984–85(a)*	1985–86*(a)*
Route-kilometres at 30 June						
Tram (kilometres)	231	231	232	n.a.	340	340
Bus (kilometres)	11,930	13,445	13,553	n.a.	n.a.	n.a.
Vehicle kilometres						
Tram ('000)	24,864	24,836	24,958	n.a.	24,747	24,778
Bus ('000)	193,324	209,104	212,423	n.a.	252,038	255,753
Rolling stock at 30 June						
Tram (number)	767	724	713	n.a.	683	663
Bus (number)	4,941	4,973	5,018	n.a.	5,942	5,918
Passenger journeys						
Tram ('000)	(*b*)100,474	(*b*)103,479	..	n.a.	112,071	115,111
Bus ('000)	(*b*)347,133	(*b*)343,216	(*b*)(*c*)325,649	n.a.	454,460	460,281

(*a*) Excludes operations of Eastern Goldfields Transport Board in Western Australia. (*b*) Excludes details of metropolitan tram and bus services in South Australia. (*c*) Excludes details of metropolitan tram and bus services in Victoria.

MOTOR VEHICLES

Tables in this section include vehicles owned by private individuals, local government authorities, State governments, and the Commonwealth Government (excluding those belonging to the defence services).

Survey of motor vehicle usage

A survey was conducted throughout Australia in late 1985 by the Australian Bureau of Statistics for the purpose of gathering information on the usage of motor vehicles. The owners of approximately 60,000 vehicles other than commercial buses were approached for information relating to the usage of their vehicles over the twelve months ended 30 September 1985. The framework from which the sample was drawn was obtained from the motor vehicle registration authorities in all States and Territories. The survey was based on respondents' recollections of their usage of the selected vehicles over their period of ownership during the survey year.

The main purpose of the survey was to determine the total distance travelled by vehicles, classified according to area and purpose of travel. Information was also obtained from the survey on: (i) tonne-kilometres; (ii) average load carried; (iii) vehicle usage (i.e. for hire and reward, ancillary or other); (iv) main type of operation; (v) fuel consumption; (vi) occupant-kilometres; and (vii) driver characteristics.

The following table shows, for Australia, total annual kilometres travelled for the twelve months ended 30 September 1985 classified by vehicle type and purpose of travel. The percentage standard errors (S.E.%) indicate the extent to which the estimates can vary by chance because only a sample and not the total vehicle population was enumerated. There are about two chances in three that a sample estimate will differ by less than one standard error from the figure that would have been obtained from a comparable complete enumeration, and about nineteen chances in twenty that the difference will be less than two standard errors. For example, if an estimate of 3,000 million kilometres has a standard error of 5 per cent (i.e. 150 million kilometres), then there would be approximately two chances in three that a comparable complete collection would give a figure within the range of 2,850 million kilometres to 3,150 million kilometres and about nineteen chances in twenty that the figure would be within the range of 2,700 million kilometres to 3,300 million kilometres.

TOTAL ANNUAL KILOMETRES BY VEHICLE TYPE AND PURPOSE OF TRAVEL AUSTRALIA, TWELVE MONTHS ENDED 30 SEPTEMBER 1985

	Laden business		*Unladen business*		*Total business (a)*		*To and from work paid and unpaid*		*Private*		*Total*	
Type of vehicle	*million kilometres*	*REL S.E. (%)*	*million kilometres*	*REL S.E. (%)*	*million kilometres*	*REL S.E. (%)*	*million kilometres*	*REL S.E. (%)*	*million kilometres*	*REL S.E. (%)*	*million kilometres*	*REL S.E. (%)*
Cars and station wagons	..	..	..	..	22,985.5	2.5	25,035.6	1.7	58,552.4	1.1	106,573.5	0.8
Motor cycles	..	..	..	..	203.0	9.6	857.9	4.4	1,215.4	4.7	2,276.2	3.2
Utilities and panel vans	7,403.0	3.4	3,099.7	5.0	10,978.3	2.8	3,659.9	3.8	5,483.2	3.5	20,121.3	1.8
Rigid trucks	4,986.0	1.9	2,029.8	2.3	7,015.7	1.7	316.1	6.8	295.2	7.8	7,627.0	1.6
Articulated trucks	2,638.6	1.2	917.4	1.5	3,555.9	1.0	26.9	8.0	4.9	13.5	3,587.7	1.0
Other truck type vehicles	..	..	..	..	227.6	6.0	3.8	35.1	10.3	72.5	241.6	6.6
Total	**15,027.6**	**1.8**	**6,046.8**	**2.7**	**4,4966.0**	**1.5**	**29,900.1**	**1.5**	**65,561.3**	**1.0**	**140,427.4**	**0.7**

(a) Includes the total kilometres travelled for business purposes of cars, station wagons, motor cycles and utilities and panel vans predominantly used for private purposes. The dissection of business travel into laden/unladen was not sought for these vehicles.

Motor vehicles on register

Details of motor vehicles on the register are compiled by up-dating motor vehicles census data from information made available by the various motor vehicles registration authorities in the States and Territories. Censuses of motor vehicles have been conducted in respect of 31 December 1955 and 1962, and 30 September 1971, 1976, 1979, 1982 and 1985. At these census dates considerably greater information concerning the particulars shown in the tables following is available. Final detailed results of the 1985 census for each State and Territory and Australia have been published in a combined publication.

MOTOR VEHICLE CENSUS: 30 SEPTEMBER 1985 (FINAL) ('000)

State or Territory	Motor cars and station wagons	Utilities	Panel vans	Trucks Rigid	Trucks Articulated	Other truck type vehicles	Buses	Motor cycles	Total (a)
New South Wales	2,169.7	170.8	204.8	165.5	16.7	13.9	43.2	115.8	2,900.5
Victoria	1,887.5	134.9	55.7	181.0	12.4	12.6	13.3	78.8	2,376.3
Queensland	1,041.0	201.9	82.3	56.7	8.6	4.5	10.2	74.1	1,479.4
South Australia	657.0	50.9	36.3	48.0	5.1	6.8	3.6	41.0	848.7
Western Australia	631.0	64.3	68.9	67.6	4.9	7.7	6.2	37.0	887.6
Tasmania	200.4	25.6	14.3	16.1	1.5	2.8	1.7	6.4	268.7
Northern Territory	40.6	13.9	5.1	5.3	0.9	0.3	0.7	4.3	71.1
Australian Capital Territory	107.0	6.1	4.7	3.5	0.2	0.7	1.1	4.3	127.6
Australia	**6,734.2**	**668.4**	**472.1**	**543.7**	**50.2**	**49.4**	**80.1**	**361.6**	**8,959.7**

(a) Excludes tractors, plant and equipment, caravans and trailers.

MOTOR VEHICLES ON REGISTER, BY TYPE OF VEHICLE, AUSTRALIA ('000)

30 June	Motor cars and station wagons	Utilities, trucks, panel vans, other truck type vehicles and buses	Total (excludes motor cycles)	Motor cycles
1981	6,021.1	1,544.8	7,565.9	351.8
1982	6,308.1	1,661.1	7,969.2	389.2
1983	6,469.6	1,718.3	8,187.8	402.0
1984	6,636.2	1,798.2	8,434.4	398.4
1985	6,842.5	1,886.6	8,729.1	389.2
1986	6,985.4	1,930.7	8,916.0	374.5

MOTOR VEHICLES (a) ON REGISTER PER 1,000 OF POPULATION, STATES AND TERRITORIES

30 June	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	A.C.T.	Aust.
1980	467.9	487.0	518.8	515.8	563.8	530.7	373.1	455.2	494.2
1981	480.0	499.6	539.1	522.3	569.4	544.1	408.6	464.4	507.0
1982	499.8	525.1	554.3	532.9	576.5	551.5	420.4	463.8	525.0
1983	503.7	539.5	565.2	541.1	566.8	562.9	433.9	471.7	532.4
1984	509.3	554.1	574.2	555.8	574.0	571.1	453.9	486.1	542.2
1985	520.7	571.1	573.7	572.0	589.4	588.0	467.4	488.8	553.9
1986	526.0	575.1	574.3	582.5	590.7	596.8	478.1	483.2	558.2

(a) Excludes motor cycles, tractors, plant and equipment, caravans and trailers.

Drivers' and riders' licences

At 30 June 1986, the numbers of licences in force to drive or ride motor vehicles were: New South Wales, 3,516,901; Victoria, 2,588,163; Queensland, 1,600,000 (est); South Australia, 838,007; Western Australia, 846,135; Tasmania, 253,777; Northern Territory, 118,238; Australian Capital Territory, 159,770.

Registrations of new motor vehicles

Particulars of registrations of new motor vehicles are shown by type of vehicle in preliminary monthly publications, and by type and make of vehicle in monthly and annual publications of motor vehicle registrations.

In these statistics 'registrations' means registrations processed by the motor vehicle registration authorities in the States and Territories during the period.

REGISTRATIONS OF NEW MOTOR VEHICLES, BY TYPE OF VEHICLE

State or Territory	Motor cars and station wagons	Utilities	Panel vans	Trucks		Other truck type vehicles (a)	Buses	Total (excludes motor cycles)	Motor cycles
				Rigid	Articulated				
1986–87—									
New South Wales	129,700	9,674	11,385	7,990	1,083	611	4,103	164,546	8,044
Victoria	107,862	5,086	1,142	12,022	840	469	852	128,273	5,294
Queensland	55,552	9,183	2,715	2,239	498	123	636	70,946	4,228
South Australia	29,788	2,438	1,491	1,755	318	197	231	36,218	1,999
Western Australia	33,642	3,251	2,507	3,572	174	132	562	43,840	2,305
Tasmania	9,206	1,209	438	687	136	103	94	11,873	526
Northern Territory	3,037	1,173	197	108	86	19	56	4,676	554
Australian Capital Territory	7,293	471	268	320	14	10	53	8,429	249
Australia	**376,080**	**32,485**	**20,143**	**28,693**	**3,149**	**1,664**	**6,587**	**468,801**	**23,199**
1985–86	476,488	46,499	33,138	39,033	4,029	2,159	10,868	612,214	35,906
1984–85	510,893	54,507	45,582	44,422	3,627	1,952	13,847	674,830	45,879
1983–84	461,018	46,140	(b)46,779	33,397	2,581	1,630	(b)12,169	603,714	46,684
1982–83	453,523	43,682	52,364	31,514	2,426	1,834	4,680	590,023	61,061
1981–82	471,255	52,035	48,009	40,062	3,665	2,218	4,998	622,242	71,691

(a) Non-freight carrying vehicles. (b) From August 1983 in N.S.W., the body type classification applied by the registration authority for small bus type vehicles changed from panel vans to buses.

Road traffic accidents

ROAD TRAFFIC ACCIDENTS INVOLVING CASUALTIES(a) (ADMISSIONS TO HOSPITALS): NUMBER OF ACCIDENTS, PERSONS KILLED OR INJURED, 1985

State or Territory	Number of accidents	Persons killed	Persons injured	Per 100,000 of mean population			Per 10,000 motor vehichles registered (b)		
				Number of accidents	Persons killed	Persons injured	Number of accidents	Persons killed	Persons injured
New South Wales	7,644	1,067	8,610	139.6	19.5	157.2	25.6	3.6	28.8
Victoria	7,221	683	8,642	175.2	16.6	209.7	29.6	2.8	35.5
Queensland	3,808	502	4,341	149.4	19.7	170.4	24.6	3.2	28.1
South Australia	2,690	269	3,199	197.4	19.7	234.7	32.9	3.3	39.2
Western Australia	2,487	243	2,947	176.7	17.3	209.3	28.7	2.8	34.0
Tasmania	664	78	795	150.2	17.6	179.9	24.9	2.9	29.8
Northern Territory	455	67	533	316.1	46.5	370.3	63.4	9.3	74.2
Australian Capital Territory	210	33	213	82.9	13.0	84.1	16.4	2.6	16.6
Australia	**25,179**	**2,942**	**29,280**	**159.8**	**18.7**	**185.8**	**27.6**	**3.2**	**32.1**

(a) Accidents reported to the police or other relevant authority which occurred in public thoroughfares and which resulted in death within thirty days or personal injury to the extent that the injured person was admitted to hospital. (b) Number of motor vehicles (excluding tractors, plant and equipment) on register at 30 June 1985.

ROAD TRAFFIC ACCIDENTS INVOLVING FATALITIES

Year	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	A.C.T.	Australia
Accidents involving fatalities—									
1981	1,130	677	510	196	217	97	63	24	2,914
1982	1,115	631	522	239	203	84	52	26	2,872
1983	877	610	437	235	191	63	45	27	2,485
1984	910	584	448	205	203	77	45	35	2,507
1985	954	605	452	240	219	69	59	30	2,628
1986p	910	601	421	257	207	78	63	30	2,567
Persons killed—									
1981	1,291	766	594	222	238	111	70	29	3,321
1982	1,253	709	602	270	236	96	60	26	3,252
1983	966	664	510	265	203	70	49	28	2,755
1984	1,037	657	505	232	220	83	50	37	2,821
1985	1,067	683	502	269	243	78	67	33	2,942
1986p	1,030	656	481	286	227	91	71	32	2,874

ROADS

A special article on the development of roads in Australia is on page 775.

Summary of roads used for general traffic

Proclaimed or declared roads

The table following is a summary of the roads proclaimed or declared under the Acts of the several States relative to the operations of the central road authorities, and shows the lengths of various classes proclaimed or declared as at 30 June 1986. The central road authority in each State assumes responsibility under the Act for the whole, or a proportion, of the cost of construction and maintenance of these roads, the extent varying from State to State and with the class and locality of the roads. Before proclamation of a main road, consideration is given, in general, to the following points: availability of funds; whether the road is, or will be, within one of several classes of main trunk routes; the value of the roads as connecting links between centres of population or business; whether the district is, or will be, sufficiently served by railways. Provision is also made in some States for the declaration of roads other than main roads. The absence of a particular class in any State does not necessarily imply that there are no roads within that State that might be so classified; the classes are restricted only to roads proclaimed or declared under the Acts. A further point to make is that, through various causes (e.g. insufficiency of funds, man-power or materials), construction or maintenance may not keep pace with gazettal of roads, and, therefore, the condition of a road may not match its status.

PROCLAIMED OR DECLARED ROADS: LENGTHS, STATES, 30 JUNE 1986

(kilometres)

Class of road	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*Total*
State Highways and Freeways	10,412	7,529	10,423	—	7,777	1,933	38,074
Trunk roads	7,085	—	219	12,527	—	—	19,831
Ordinary main roads	18,342	14,867	8,145	—	7,466	1,259	50,079
Total main roads	*35,839*	*22,396*	*18,787*	*12,527*	*15,243*	*3,193*	*107,985*
Secondary roads	(a)298	—	13,146	—	8,803	300	22,547
Development roads	3,256	—	8,737	—	—	53	12,046
Tourist roads	430	845	—	—	—	205	1,480
Other roads	2,516	(b)1,006	—	—	—	—	3,522
Total other roads	*6,500*	*1,851*	*21,883*	—	*8,803*	*557*	*39,594*
Total	**42,339**	**24,247**	**40,670**	**12,527**	**24,046**	**3,750**	**147,579**

(a) Metropolitan only. (b) Forest roads.

Total roads

The following table represents an attempt to classify all the roads open for general traffic in Australia, at the latest dates available, according to States and Territories and to certain broad surface groups. The figures in the table for the States are obtained from the Deputy Commonwealth Statistician in each State, and are derived mainly from local government sources.

ALL ROADS OPEN FOR GENERAL TRAFFIC LENGTHS, STATES AND TERRITORIES
30 JUNE 1986

(kilometres)

Surface of roads	*N.S.W. (a) (b)*	*Vic. (c)*	*Qld*	*S.A.*	*W.A. (d)*	*Tas.*	*N.T. (e)*	*A.C.T.*	*Total*
Bitumen or concrete	75,259	66,354	54,524	22,382	39,876	8,668	5,631	2,351	275,045
Gravel, crushed stone or other improved surface	63,999	47,041	43,021	—	37,272	8,296	5,672	170	205,471
Formed only	34,584	23,353	52,643	79,618	42,792	352	4,665	—	238,007
Cleared only	21,287	21,828	17,493	—	20,216	5,261	3,907	—	89,992
Total	**195,129**	**158,576**	**167,681**	**102,000**	**140,156**	**22,577**	**19,875**	**2,521**	**808,515**

(a) Excludes road designated but not trafficable. Excludes Lord Howe Island and the unincorporated area of the Western Division. (b) Figures as at 31 December 1985. (c) Excludes roads coming under the responsibility of the State Electricity Commission (38 km), Melbourne and Metropolitan Board of Works (32 km) and Forests Commission (39,656 km). (d) Excludes Forests Department roads. (e) Excludes roads in towns and Local Government Areas.

National Association of Australian State Road Authorities—NAASRA

The National Association of Australian State Road Authorities was established in 1934. The present member authorities are: Department of Main Roads, New South Wales; Road Construction Authority, Victoria; Main Roads Department, Queensland; Highways Department, South Australia; Main Roads Department, Western Australia; Department of Main Roads, Tasmania; Northern Territory Department of Transport and Works; Commonwealth Department of Transport and Communications.

The Association's objectives are to provide a central organisation where, by co-operative effort, a uniform approach to the improvement, planning and development of the Australian road system can be achieved. National standards for road and bridge construction and maintenance and improved administrative and financial control methods are developed by committees of experienced staff from the authorities, with secretarial services provided by a small staff located in Sydney.

This Secretariat arranges publication of the policies and standards which are widely used by road authorities, local government and universities; co-operates with the Standards Association of Australia on the preparation of national codes of practice; and acts as an Australian centre for contact with overseas road bodies and for the circulation of standards published by them.

The Association is a member of the Permanent International Association of Road Congress (PIARC) and of the Road Engineering Association of Asia and Australasia (REAAA).

Australian Road Research Board—ARRB

The Australian Road Research Board is a non-profit-making company founded in 1960 by NAASRA, and is located at Vermont in Victoria. It is financed by Federal and State Government Road Authorities whose permanent heads make up ARRB's Board of Directors. The Executive Director, a full-time employee and member of the Board, is responsible for administering the Director's policies.

The ARRB regularly undertakes and sponsors road and road transport research over a comprehensive range of subjects and disseminates results to appropriate organisations, engineers and scientists involved in the design, location, construction, upkeep and use of roads.

ARRB disseminates road research information through its major biennial conferences and regular symposia, seminars and workshops and through its publications which include the *ARRB Conference Proceedings*, a quarterly journal *Australian Road Research*, the *Source Book for Australian Roads*, symposium and workshop papers and various reports and technical manuals arising out of its many research projects. ARRB also maintains a unique library of road literature and operates a computer-based information service which abstracts and indexes road-related literature and research in progress. In 1987 the Information of Roads (INROADS) data base was made publically accessible on CSIRO's AUSTRALIS system. The INROADS data base lists all ARRB publications from 1960, significant Australian road-related literature from 1977, publications catalogued for the ARRB Library, including some retrospective conversion of a card catalogue from 1984, and an annual update of current research in progress. INROADS supersedes the ARRD and ROAD data bases.

ARRB acts as the Australian member of the Organisation for Economic Co-operation and Development's International Road Research Documentation (IRRD) system, contributing information on Australian literature and projects. IRRD information from all member countries is available to Australians through ARRB's computer search services. ARRB also maintains close contacts with road research organisations in other countries.

AIR TRANSPORT

The Commonwealth imposes safety and operational controls on the Australian aviation industry under the *Commonwealth Air Navigation Act 1920* and regulations made under the Act, which are administered by the Department of Transport and Communications. In accordance with the Act and regulations, the Department determines the rules of the air and general conditions of flight over Australian territory, classifies and licenses air services, approves timetables, negotiates international air transport agreements, and approves international fares and freight rates.

The Department determines airworthiness requirements for civil aircraft and issues certificates of airworthiness, and licenses aircraft operating crews and flying training schools. It is responsible for the operation of the Australian air traffic control and air navigation network, provides (through the Bureau of Meteorology) a national weather information service for aircraft, and co-ordinates search and rescue operations. It licenses all civil aerodromes and also operates Commonwealth-owned civil aerodromes and related facilities.

In accordance with the *Air Navigation (Charges) Act 1952*, administered by the Department of Transport and Communications, the Commonwealth currently imposes charges on aircraft operators for the use of the aerodromes, air route facilities, meteorological services, and search and rescue services it maintains and operates.

International activity

International organisations

Australia is one of the 157 (as at 30 June 1986) members of the International Civil Aviation Organisation (ICAO). Australia has continued its membership of the (governing) Council since ICAO was established in 1947. Australia is also represented on the 15 member Air Navigation Commission which is responsible for drawing up international standards and procedures for the safety, regularity and efficiency of air navigation. In addition, Australia participates in the Commonwealth Air Transport Council, the South Pacific Regional Civil Aviation Council and the Airport Operators Council International.

International agreements

Australia had air service agreements in force with twenty-seven countries at 31 July 1987. Under these agreements, which have full international treaty status, Australia is granted rights to operate services from Australia to and through the countries in question; these rights are exercised by Australia's international airline, Qantas. In return, the designated airlines of the other countries which are partners to these agreements are granted traffic rights in Australia. Australia also had air service arrangements, of less than treaty status, granting traffic rights with seven other countries at 31 July 1987.

International scheduled services

At 31 July 1987, thirty overseas international airlines were operating regular scheduled air services to Australia. The carriers (and contracting states) were: Air Caledonie International (France), Air India (India), Air Nauru (Nauru), Air New Zealand Ltd International (New Zealand), Air Niugini (Papua New Guinea), Air Pacific (Fiji), Alitalia (Italy), British Airways (U.K.), CAAC (Peoples Republic of China), CP Air (Canada), Cathay Pacific Airways (U.K.), Continental Airlines Inc. (U.S.A.), Flying Tiger Line Inc. (U.S.A.), Garuda Indonesian Airways (Indonesia), JAL (Japan), JAT (Yugoslavia), KLM-Royal Dutch Airlines (Netherlands), Lufthansa German Airlines (Federal Republic of Germany), Malaysian Airline System (Malaysia), Merpati Nusantara Airlines (Indonesia), Olympic Airways (Greece), Philippine Airlines (Philippines), Polynesian Airlines Ltd (Western Samoa), Royal Brunei Airlines (Brunei), Singapore Airlines Ltd (Singapore), South African Airways (South Africa), Thai Airways International (Thailand), United Airlines (U.S.A.) and Union de Transports Aeriens (France). Polynesian Airlines Ltd also operates services on behalf of Cook Islands International (Cook Islands) and Air Pacific operates services on behalf of Solair (Solomon Islands).

Qantas, Australia's international airline, operates a fleet of 25 Boeing 747 and 6 Boeing 767 jet aircraft. All shares in Qantas Airways Limited are owned by the Commonwealth Government.

International non-scheduled services

Australia's passenger and freight charter policies encourage in-bound tourism and primary produce export flights.

International traffic

The table following shows particulars of scheduled international airline traffic during 1985–86 moving into and out of an area which embraces Australia and Norfolk Island. These figures do not include traffic between Australia and Norfolk Island.

AIR TRANSPORT: SCHEDULED INTERNATIONAL AIRLINE TRAFFIC TO AND FROM AUSTRALIA(*a*), 1985–86

Type of traffic	*Number of flights(b)(c)*	*Passengers*	*Freight tonnes*	*Mail tonnes*
Traffic to Australia—				
Qantas Airways Limited	5,733	1,166,062	40,716	n.a.
Other airlines	7,240	1,605,781	70,517	n.a.
All airlines	**12,973**	**2,771,843**	**111,233**	**n.a.**
Traffic from Australia—				
Qantas Airways Limited	5,634	1,102,369	42,125	n.a.
Other airlines	7,153	1,526,782	81,618	n.a.
All airlines	**12,787**	**2,629,151**	**123,743**	**n.a.**

(*a*) Australia and Norfolk Island. (*b*) Includes Qantas flights using aircraft leased from other airlines. (*c*) Difference between in/out numbers arises because some outward flights are operated as non-scheduled, and thus not counted in above table.

Statistics covering the operations of Australia's regular overseas services are shown in the following table. These operations include all stages of Qantas flights linking Australia with overseas countries.

AIR TRANSPORT: OPERATIONS OF AUSTRALIA'S SCHEDULED OVERSEAS SERVICES

		1980–81	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*
Hours flown	number	73,679	77,910	82,409	83,551	89,952	100,653
Kilometres flown	'000	58,188	61,052	64,898	65,670	71,046	79,050
Passengers—							
Embarkations	number	1,883,477	2,020,107	2,101,788	2,189,669	2,449,596	2,671,486
Passenger-kilometres	'000	14,876,509	14,818,491	14,477,756	15,247,801	16,858,595	18,233,088
Freight—							
Tonnes uplifted.	tonnes	53,753	66,036	75,375	84,844	90,357	91,961
Tonne-kilometres	'000	418,849	479,996	485,549	563,268	637,590	691,352
Mail—							
Tonnes uplifted.	tonnes	3,919	4,344	4,219	4,410	4,744	4,869
Tonne-kilometres	'000	36,581	39,244	40,058	40,324	43,231	45,370

The air cargo statistics set out in the following table have been compiled from information contained in import and export documents submitted by importers and exporters, or their agents to the Australian Customs Service as required by the *Customs Act 1901*.

AIR CARGO BY TRADE AREA, 1985–86

	Inward cargo		*Outward cargo*	
Trade area	*Gross weight*	*Value*	*Gross weight*	*Value*
	tonnes	$'000	tonnes	$'000
Europe	33,168	2,248,439	5,398	427,596
East Asia	7,305	246,354	15,846	488,172
Japan and North Asia	9,194	701,864	10,054	507,742
North America—E. Coast	13,634	1,285,210	3,173	206,819
North America—W. Coast	9,721	1,216,198	6,974	252,896
Central America and Carribbean	58	9,037	59	3,478
South America—E. Coast	639	52,735	26	4,309
South America—W. Coast	64	5,691	35	1,854
Africa—Mediterranean	1	26	27	534
West Africa	18	4,564	220	4,090
South and East Africa	554	19,023	386	14,542
Red Sea and Mediterranean Middle East	119	29,569	915	7,909
Middle East Gulf	26	18,960	15,114	47,480
West India	753	31,058	417	7,299
East India	1,302	33,795	142	5,899
South East Asia	3,889	350,531	30,182	270,599
New Zealand	23,856	416,355	22,930	472,345
Papua New Guinea and Solomon Islands	360	94,634	2,186	70,668
Pacific Islands and other countries	713	48,517	5,167	48,197
Trade area not specified	171	2,209	9,537	152,499
Total	**105,549**	**6,814,774**	**128,787**	**2,994,930**

Domestic activity

Both the Commonwealth and the State Governments may exercise controls over intrastate domestic aviation by virtue of their respective powers under the Constitution. The States of New South Wales, Queensland, Western Australia and Tasmania, and the Northern Territory, license air services within their borders, having regard to public interest and other considerations; in some cases approval of intrastate air fares is also required. Victoria and South Australia choose not to regulate air services and, within these States, Commonwealth requirements only must be satisfied to conduct air services. (The Commonwealth alone regulates interstate aviation and negotiates the provision of international air services with the governments of other countries.)

Trunk route services

The Commonwealth regulates domestic air transport on economic grounds in Australia through arrangements commonly known as the 'two-airline policy' which have existed in various forms for more than thirty years. Under the policy the operation of regular passenger air services over the main domestic or 'trunk' routes is restricted generally to the Commonwealth-owned Australian National Airlines Commission, trading as Australian Airlines (formerly Trans Australia Airlines) and the privately owned Ansett Airlines of Australia (a division of Ansett Transport Industries (Operations) Pty Ltd, a wholly owned subsidiary of Ansett Transport Industries Ltd). The premises underlying the policy have been that the Australian domestic trunk route network could support no more than two major operators and that any move towards a private or public monopoly was not in the public interest.

As the Commonwealth is generally constrained to licensing domestic air services on operational grounds only, it maintains the policy essentially by using the Customs (Prohibited Imports) Regulations to restrict other operators' access to aircraft which could be used to compete with Australian Airlines and Ansett over the trunk routes. The policy in its present form is based on legislation passed by Parliament in 1981—namely the *Airlines Agreement Act 1981*, the associated *Airlines Equipment Amendment Act 1981* and the *Independent Air Fares Committee Act 1981*.

The *Airlines Agreement Act 1981* approved the 1981 Airlines Agreement, the parties to which are the Commonwealth, Australian Airlines and Ansett. The Agreement provides that the Commonwealth or Ansett may give three years notice of termination.

On 7 October 1987 the Minister for Transport and Communications, Senator Gareth Evans Q.C., announced the Government's intention to withdraw from economic regulation of the domestic aviation industry and placed before the Parliament a motion that the Commonwealth give notice of termination of the Agreement.

At 30 June 1987 the Ansett fleet included 5 Boeing 767s, 12 Boeing 727s, 12 Boeing 737s and 6 Fokker F27 Friendships. At the same date, Australian Airlines operated a fleet of 11 Boeing 727s, 12 Boeing 737s, 3 Airbus A300s and 5 McDonnell-Douglas DC9s.

Regional services

In addition to their competitive trunk route services, both Ansett and Australian Airlines operate limited domestic regional services on non-competitive routes. There are also a number of smaller regional airlines so-called because in general they provide regular passenger air services in specific geographic regions.

However, in recent years East-West Airlines has considerably extended its network beyond its traditional services within New South Wales. In July 1987, East-West Airlines was purchased by Thomas Nationwide Transport Ltd and News Ltd which jointly own Ansett Transport Industries Ltd. Apart from East-West Airlines, the regional airlines are either owned by Australian Airlines (Air Queensland) or are divisions of Ansett Transport Industries (Operations) Pty Ltd (Ansett of Western Australia, Airlines of New South Wales and Airlines of Northern Australia).

The predominant aircraft types used by regional airlines are the Fokker F28 turbo-jet and the Fokker F27 turbo-prop. East-West Airlines and Air New South Wales use both types; Ansett of Western Australia uses the F28 and BAe 146 turbo-jets; Airlines of Northern Australia and Air Queensland use F27 and DC3 aircraft.

Air Queensland announced that it is to cease all operations at the end of April 1988.

Commuter services

Commuter operators are, in general, required to hold a supplementary airline licence which authorises regular passenger air services using aircraft with capacity to carry no more than 38 passengers or a 4,200 kg maximum payload. Like regional airlines they generally operate over routes other than trunk routes and often operate into centres not served by an airline. At 30 June 1987 there were 46 operators of commuter services in Australia.

The aircraft types currently used by commuter operators are predominantly those in the 6–10 seat category, such as the Piper PA31 and PA32 and Cessna 310, 402, and 404 series. Many also operate the larger DHC6 Twin Otter, Beechcraft Super King Air, Swearingen Metroliner and Embraer Bandeirante. British Aerospace Jetstream 31 and Shorts 330 and 360 are also used. During 1986 commuter operators carried some 1.1 million passengers.

General aviation

In addition to trunk route, regional and commuter services, there is a wide range of other activities undertaken by the aviation industry. Charter operations involve the use of aircraft in operations for the carriage of passengers and cargo for hire or reward which are not both scheduled and available to the public. More than 600 operators in Australia hold charter licences.

Aerial work and private operations do not involve the commercial transport of passengers and cargo for hire or reward. Aerial work involves the use of aircraft in operations such as aerial survey, aerial agriculture, advertising and flying training. Holders of charter licences generally hold aerial work licences as well. Private operations include the use of aircraft for the personal transportion of the owner and the carriage of persons or goods without a charge being made for the carriage. In certain circumstances some operations which would otherwise be classified as aerial work may be considered private. No air service licence is required to conduct private operations.

Cargo services

Cargo, i.e. freight and mail, is also carried on the regular public passenger services operated by Australian Airlines, Ansett, regional airlines and commuters, as well as on charter services. Also Australian Airlines and Ansett each has a dedicated B727 cargo aircraft involved in regular interstate services. The Interstate Parcel Express Company (Australia) Pty Ltd, trading as IPEC Aviation, operates cargo airline services using two Argosy aircraft and domestic cargo charter services using a DC9 aircraft, also over interstate routes.

Scheduled domestic airlines services

Statistics of all regular domestic airline services are set out in the following table.

AIR TRANSPORT: OPERATIONS OF SCHEDULED DOMESTIC AIRLINE SERVICES AUSTRALIA (*a*)

		1981–82	*1982–83*	*1983–84*	*1984–85*	*1985–86p*	*1986–87p*
Hours flown	number	268,339	245,567	242,075	250,779	261,978	276,974
Kilometres flown	'000	136,769	127,952	126,087	n.a.	n.a.	n.a.
Passengers—							
Passenger uplifts	number	11,396,510	10,332,934	10,597,651	11,359,700	12,057,300	12,512,600
Passenger-kilometres	'000	10,155,379	9,327,206	9,684,589	10,413,381	11,277,031	12,042,318
Freight—							
Tonnes uplifted	tonnes	136,250	141,853	149,879	153,181	150,369	137,692
Tonne-kilometres	'000	117,936	124,796	137,819	139,597	138,595	129,546
Mail—							
Tonnes uplifted	tonnes	16,841	16,767	17,571	18,467	17,997	18,713
Tonne-kilometres	'000	16,515	17,167	17,621	18,603	18,128	19,068

(*a*) Includes flights of all domestic airlines, between airports located within Australia and includes flights by East-West Airlines and Airlines of New South Wales between Australia and Norfolk Island.

Airport activity—domestic passengers

The statistics set out in the next table have been compiled by aggregating all domestic airline passenger traffic loaded and unloaded at each airport. They include passengers on flights between Australia and Norfolk Island. At ports where through-passengers transfer between flights, such passengers are counted as embarking as well as disembarking passengers.

SCHEDULED DOMESTIC AIRLINES PASSENGER UPLIFTS AND DISCHARGES AT PRINCIPAL AUSTRALIAN AIRPORTS

Airport	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*	*1986–87*
Sydney	5,917,874	5,338,944	5,501,492	5,900,743	6,334,313	6,683,652
Melbourne	5,038,634	4,500,234	4,550,568	4,851,880	5,127,843	5,314,559
Brisbane	2,758,922	2,518,841	2,554,622	2,684,608	2,800,387	2,979,136
Adelaide	1,852,906	1,635,544	1,684,281	1,762,845	1,825,412	1,711,638
Perth	1,017,173	995,987	1,049,567	1,127,184	1,230,846	1,323,613
Canberra	820,943	786,449	838,175	931,673	990,222	1,006,713
Coolangatta	648,384	553,886	567,623	630,474	731,103	852,648
Cairns	442,524	387,895	404,168	426,206	494,217	623,050
Hobart	475,127	433,910	448,549	481,612	493,794	477,283
Townsville	396,622	377,186	388,752	404,463	409,478	417,404
Launceston	376,536	356,261	352,494	390,867	361,795	353,089
Darwin	287,210	266,268	281,032	302,590	334,321	338,819

General aviation activity, which covers all flying other than scheduled airline operations has grown rapidly throughout Australia in recent years and is an important sector of the Australian aviation industry. Hours flown by general aviation during 1984–85 were estimated at 1.73 million.

Aerodromes

The number of aerodromes throughout Australia and its external territories at 30 June 1987 was 436. Sixty-nine were owned by the Commonwealth Government and 367 by local authorities and private interests. The number of licensed helipads throughout Australia and its Territories is 6. Capital expenditure on aerodrome and building construction was $113.4 million in 1986–87. Maintenance expenditure on Commonwealth Government-owned aerodromes during 1986–87 was $14.2 million. Expenditure on development and maintenance grants to licensed aerodromes participating in the Local Ownership Plan totalled $10.2 million.

Airway facilities

A total of 511 navigational aids were in service at 30 June 1987. The total includes 250 non-directional beacons (NDB), 108 distance measuring equipment (DME), 21 international distance measuring equipment (DMEI), 80 VHF omni-directional ranges (VOR), 17 instrument landing systems (ILS), five twin locator approach systems and 30 ILS locators. In addition, there are 60 privately owned navigational aids which include one DME, two DMEIs, two VORs and 55 NDBs.

One hundred and ninety-six aerodromes are now equipped with night landing facilities. One hundred and twenty-six Australian-designed 'T' systems (T-VASIS) are operating. Seven long-range surveillance radars, two-short range and seven secondary surveillance radars are also in operation. There are 32 fully equipped Air Traffic Control Centres and 43 flight service units in operation.

Air transport registrations, licences, etc., in force in Australia

At 31 December 1986 there were 7,238 aircraft registered in Australia. At the same time 41,338 persons held aeroplane pilot licences, of which 23,289 were private pilots, 4,745 commercial pilots, 1,649 senior commercial pilots, 2,200 air transport pilots and 9,455 student pilots. In addition, 1,910 persons held helicopter pilot licences of which 231 were private pilots, 826 commercial pilots, 124 senior commercial pilots and 729 student pilots. There were also 15 gyroplane, 31 commercial balloon, 827 flight engineer and 13 navigator licences in force.

Accidents and casualties

AIR TRANSPORT: ACCIDENTS INVOLVING CASUALTIES *(a)*, AUSTRALIA *(b)*

	1981	*1982*	*1983*	*1984*	*1985*	*1986*
Number	39	51	44	40	31	40
Persons killed	53	53	47	45	43	44
Persons seriously injured	33	35	29	25	27	31

(*a*) Accidents involving civil aircraft (including registered gliders) which resulted in death or serious injury. Excludes parachutists and casualties involving non-registered aircraft. (*b*) Excludes accidents ouside Australia involving aircraft on the Australian register, includes all accidents to overseas registered aircraft that occur in Australia.

POSTAL, TELECOMMUNICATIONS AND RADIOCOMMUNICATIONS SERVICES

In this section, particulars for the Australian Capital Territory are included with those for New South Wales, and the South Australian figures include particulars for the Northern Territory, unless otherwise indicated.

Australian Postal Commission

The Australian Postal Commission was established under the *Postal Services Act 1975*. It commenced operations on 1 July 1975 and trades under the name Australia Post.

Under the Postal Services Act, the Australian Postal Commission is required to operate Australia's postal services in such a manner as will best meet the social, industrial and commercial needs of the Australian people. In performing its functions, the Commission is required to have regard for the special needs for postal services of Australian people who reside or carry out business outside the cities. It is also required to raise sufficient revenue to cover operating expenditure and to fund at least half of its capital expenditure.

Australia Post provides surface and airmail services within Australia and to and from other countries. Special services provided include express courier, electronic mail, priority paid mail, business reply post, cash-on-delivery, certified mail, freepost, messenger delivery, a security mail service and a number of reduced rate services.

Australia Post operates a money transfer service, sells postal products such as padded post bags, postal stationery and philatelic items, and acts as agent on behalf of Commonwealth, State and local Government departments and authorities and for private sector principals.

Australia Post is the authority for the issue of postage stamps throughout the Commonwealth of Australia and its external territories.

The following tables give details of Australia Post's financial results, services and operation.

AUSTRALIAN POSTAL COMMISSION: PROFIT AND LOSS

($'000)

Year ended 30 June—	*1982*	*1983*	*1984*	*1985*	*1986*	*1987*
Revenue—						
Mail services	767,843	870,719	971,676	1,080,539	1,186,422	1,370,930
Commission on agency services	86,935	90,113	90,449	94,547	87,291	83,328
Postal money order service	10,059	10,544	11,632	11,940	11,846	12,384
Other revenue	22,591	28,058	21,993	24,269	39,832	38,440
Total	**887,428**	**999,434**	**1,095,750**	**1,211,295**	**1,325,391**	**1,505,082**
Expenditure—						
Labour and related expenditure	n.a.	774,662	831,600	911,776	973,294	1,049,186
Carriage of mail by contractors	n.a.	83,665	92,984	103,551	109,418	121,183
Depreciation and interest	n.a.	15,056	15,299	17,159	22,294	27,744
Other expenditure	n.a.	117,257	131,716	154,301	189,530	252,079
Total	**906,650**	**990,640**	**1,071,599**	**1,186,787**	**1,294,536**	**1,450,192**

AUSTRALIAN POSTAL COMMISSION: PROFIT AND LOSS STATEMENT FOR THE YEAR ENDED 30 JUNE 1987

($'000)

Revenue—	
Mail services	1,370,930
Commission on agency services	83,328
Postal money order service	12,384
Other revenue	38,440
Total	*1,505,082*
Expenditure—	
Labour and related expenditure	1,049,186
Carriage of mail by contactors	121,183
Accommodation	64,994
Stores and supplies	71,865
Depreciation	20,542
Interest	7,202
Other operating expenditure	115,220
Total	*1,450,192*
Operating Profit	54,890
Appropriations—	
Accumulated profit brought forward	29,746
Operating profit for the year	54,890
Adjustments to provision	(23,000)
Accumulated profit carried forward	61,636

AUSTRALIAN POSTAL COMMISSION: PERSONS ENGAGED IN PROVIDING POSTAL SERVICES AT 30 JUNE 1986 AND 1987

	H.Q.	*N.S.W. (incl. A.C.T.)*	*Vic.*	*Qld*	*S.A. (incl. N.T.)*	*W.A.*	*Tas.*	*Aust. 1987*	*Aust. 1986*
Official staff (*a*)—									
Full-time Permanent	637	12,723	8,867	4,281	2,685	2,469	719	32,381	31,766
Full time Temporary	19	1,715	760	299	132	208	32	3,165	3,136
Part-time	—	1,229	613	337	350	351	93	2,973	2,872
Other staff (*b*)	—	2,775	1,761	1,617	774	658	374	7,959	8,330
Total	**656**	**18,442**	**12,001**	**6,534**	**3,941**	**3,686**	**1,218**	**46,478**	**46,104**

(*a*) 'Official Staff' are those whose employment is governed by the *Postal Services Act 1975*. (*b*) Includes persons who are not employed under the Postal Services Act, but who are engaged on the basis of business transacted. Also included are persons or organisations who hold road mail service contracts with the Australian Postal Commission.

AUSTRALIAN POSTAL COMMISSION: MAIL DELIVERY NETWORK AND POST OFFICES AT 30 JUNE 1986 AND 1987

	N.S.W. (incl. A.C.T.)	*Vic.*	*Qld*	*S.A. (incl. N.T.)*	*W.A.*	*Tas.*	*Aust. 1987*	*Aust. 1986*
Contract road services	1,298	729	812	277	244	182	3,542	4,239
Households receiving mail	2,118,233	1,498,819	955,237	586,146	525,528	158,705	5,842,668	5,553,392
Businesses receiving mail	218,426	145,187	104,666	55,569	52,977	15,610	592,435	545,489
Post Offices—								
At 1 July 1986	501	337	213	146	154	41		1,392
At 30 June 1987	500	338	216	145	152	41	1,392	
Agencies—								
At 1 July 1986	994	854	528	416	257	189		3,238
At 30 June 1987	945	845	523	399	248	185	3,145	
Total post offices and agencies	**1,445**	**1,183**	**739**	**544**	**400**	**226**	**4,537**	**4,630**

AUSTRALIAN POSTAL COMMISSION: TOTAL POSTAL ARTICLES HANDLED

('000)

Year ended 30 June	*Posted for delivery within Australia*	*Posted for places abroad*	*Received from abroad*	*Total postal articles handled*
1982	2,606,124	105,154	165,276	2,876,554
1983	2,669,363	111,050	163,575	2,943,988
1984	2,764,113	106,585	164,362	3,035,060
1985	2,877,476	107,783	163,074	3,148,333
1986	2,970,353	115,688	166,444	3,252,485
1987	3,143,251	125,995	169,306	3,438,552

AUSTRALIAN POSTAL COMMISSION: ORDINARY POSTAL ARTICLES *(a)*

('000)

	Standard articles			
Year ended 30 June	*Posted for delivery within Australia*	*Posted for places abroad*	*Received from abroad*	*Total articles*
1985	2,468,109	91,829	117,827	2,677,765
1986	2,543,624	101,025	121,022	2,765,671
1987	2,689,440	108,228	122,379	2,920,047
STATES—YEAR ENDED 30 JUNE 1987				
New South Wales (incl. A.C.T.)	1,078,789	41,309	61,883	1,181,981
Victoria	722,741	35,369	36,235	794,345
Queensland	390,973	12,265	8,370	411,608
South Australia (incl. N.T.)	218,548	7,969	4,718	231,235
Western Australia	223,261	11,316	9,917	244,494
Tasmania	55,128	nil	1,256	56,384

(*a*) Includes Certified, Messenger Delivery and Priority Paid Mail.

Telecommunications services within Australia

The Australian Telecommunications Commission was established on 1 July 1975 under the provisions of the *Telecommunications Act 1975* and operates under the trading name Telecom Australia.

Functions

Under section 7 of the Telecommunications Act the Minister may, after consultation with the Commission, give to the Commission, in writing, directions with respect to the performance of its functions and the exercise of its powers, as appear necessary in the public interest. The functions of the Commission are to:

- plan, establish, maintain and operate telecommunications services within Australia;
- operate such other services as the Commission is authorised by the Telecommunications Act to operate;
- provide, at the request of the Commonwealth Government, technical assistance outside Australia in relation to the planning, establishment, maintenance and operation of telecommunications services in countries outside Australia;
- do anything incidental or conducive to the performance of any of the preceding functions.

The Commission is required to perform its functions in such a manner as will best meet the social, industrial and commercial needs of the Australian people for telecommunications services and make its services available throughout Australia for all people who reasonably require those services.

Subsidiary and associated companies

The Commission may also, with the approval of the Minister, form, or participate with other persons in the formation of, a company that would carry on a business relating to telecommunications. Pursuant to the powers conferred on it by legislative amendments contained in section 10A of the Telecommunications Act, Telecom has:

- formed a wholly-owned subsidiary company, Telecom Australia (International) Limited, to engage in international consulting and project management;
- formed a private company, QPSX Communications Pty Ltd, to develop a high-speed distributed packet switch network (Telecom owns a 60 per cent equity in the company);
- participated in the formation of a company, National Protocol Support Centre Ltd, which will provide a reference, support, testing and evaluation service to industry in relation to Open System Interconnection interface protocols.

Telecom holds a 25 per cent shareholding in AUSSAT Pty Ltd.

Statistics

The following table shows selected statistics relating to the latest three years of the Commission's operations.

AUSTRALIAN TELECOMMUNICATIONS COMMISSION: SUMMARY OF SELECTED STATISTICS

Year ended 30 June—		*1985*	*1986*	*1987*
FINANCIAL				
Revenue	$ million	4,764.9	5,471.7	6,047.5
Expenses	"	4,379.7	5,007.7	5,604.2
Operating profit	"	385.2	464.0	443.3
Rate of return	%	11.1	10.8	10.6
Internal funding	%	65	71	71
Addition to fixed assets	$ million	1,570.1	1,980.9	2,403.1
Net value of fixed assets	"	10,154.9	11,276.6	12,759.4
TRAFFIC (million)				
Telephone calls				
Local		6,500.0	7,195.2	7,623.1
Trunk		1,026.1	1,172.1	1.327.0
To overseas		27.1	34.6	47.8
Total		*7,553.2*	*8,401.9*	*8,997.9*
Telex calls				
National		49.4	51.3	45.8
To overseas		14.3	15.1	15.4
Total		*63.7*	*66.4*	*61.2*
Telegrams				
National		3.4	2.9	2.4
To overseas		0.7	0.6	0.3
Total		*4.1*	*3.5*	*2.7*
Calls to recorded information services		107.2	120.0	129.7
NETWORK AND OPERATIONS				
Telephone				
Demand for new services		615,628	616,908	610,267
Connection of new services		590,417	614,018	617,806
Services in operation		6,186,835	6,501,468	6,816,301
Telex				
Services in operation		44,851	46,423	43,029
Data services				
Datel service—data modems				
Modems in operation		94,672	102,367	105,825
Digital data service—network terminating units		11,959	22,753	35,145
AUSTPAC service—number of outstations		—	2,104	4,041
STAFF				
Average full-time staff		91,387	94,420	93,857
Total payroll	$ million	2,006.9	2,186.1	2,300.5

Australia's National Satellite System—AUSSAT

AUSSAT Pty Ltd

AUSSAT Pty Ltd was established by the Federal Government in November 1981 as a commercial company to own, operate and manage Australia's National Satellite System.

AUSSAT'S Memorandum and Articles of Association and the *Satellite Communications Act 1984* require the company to:

- provide a telecommunications system for Australia by using space satellites and make available the facilities for use in telecommunications systems in neighbouring regions;
- provide service on a non-discriminatory basis and to set fair and equitable charges;
- operate as a commercial taxpaying enterprise paying reasonable dividends to the shareholders.

The company currently has a paid up equity capital of $100 million. Seventy-five per cent of its shareholding is held by the Australian Government with the remaining 25 per cent being held by Telecom Australia.

AUSSAT has a board of nine directors and employs a staff of some 250 people, the majority of whom are highly qualified engineers, technicians and scientists.

The Australian National Satellite System

AUSSAT's first generation satellite system comprises three Hughes Aircraft Company HS 376 spin stabilised satellites. Geostationary orbit locations are: AUSSAT 1—160°E longitude, AUSSAT 2—156°E longitude with AUSSAT 3 at 164°E longitude, some 36,000 kilometres above the earth, directly over the equator.

Each satellite has a minimum design life of seven years. The first two satellites, launched by the Space Shuttle in August and November 1985 respectively, are expected to achieve a seven and a half-year life. It is expected that AUSSAT 3, launched in September 1987 by the European ARIANE rocket, will achieve an on-orbit life of some ten years.

Each satellite carries four high powered (30 Watt) transponders and eleven standard power (12 Watt) transponders, providing a total of 12 x 30 Watt transponders and 33 x 12 Watt transponders on the three satellite first generation system. The satellites operate in the 12-14 GHz KU Band, on a dual polarised basis to provide for re-use of band width.

The three dish antenna system used on the Australian satellites is a unique and distinguishing feature. The antenna array enables each satellite to provide national beam coverage of the entire Australian continent and its offshore regions and four spot beams covering:

- North East (Queensland)
- Central Australia (Northern Territory and South Australia)
- West (Western Australia)
- South East (New South Wales, Victoria and Tasmania)

The satellites also have the capability of providing a switched beam to cover Papua New Guinea, and AUSSAT 3 has a switched beam capability covering the south-west Pacific region and New Zealand.

AUSSAT also operates two telemetry, tracking command and monitoring ground stations. The main centre is located in the Sydney suburb of Belrose, and it is from this station that final positioning and maintenance of the satellites in the geostationary orbit is monitored and controlled. A backup to the Belrose Satellite Control Centre is located in the Perth suburb of Lockridge.

Ground segment

AUSSAT owns and operates a network of eight Major City Earth Stations (MCES) located in Melbourne, Hobart, Adelaide, Perth, Darwin, Brisbane, Sydney and Canberra.

These facilities are designed to provide 'gateway' access to the satellites for AUSSAT customers whose requirements for services do not warrant the purchase of their own satellite earth stations. Microwave or land line connection from each station to customer premises is available.

Applications

The first AUSSAT satellite was commissioned for service on 1 October 1985 with the second satellite coming on-line on 1 January 1986.

Since commencing operation, the satellite system has proven to be an outstanding success with demand for capacity being far greater than originally projected. More than 80 per cent of available capacity on the first two satellites has been contracted and is now in service.

The design of the satellite communications payload and beam configuration provides multi-purpose capabilities for the system. It allows for the provision of broadcast services for television and radio, as well as program distribution and interchange and for a full range of telecommunication services such as voice, video, telex and data.

Summary of current AUSSAT applications

Broadcasting direct-to-home

The single largest application at the present time is the provision of broadcasting services for television and radio directly into homes in remote outback regions of Australia. This service, known as the Homestead and Community Broadcasting Satellite Service (HACBSS) is being provided, initially, by the Australian Broadcasting Corporation (ABC). The HACBSS service provided by the ABC comprises television programming, two AM radio services and a stereo FM radio service.

With the launch and commissioning of AUSSAT 3, the service provided by the ABC will be fully supplemented by a similar commercial service known as the Regional Commercial Television Service.

Major network television

Australia's three major television networks are also large users. Each network has leased a standard power (12 watt) transponder and is using the satellite system for program distribution, news gathering and itinerant special program events, such as sporting fixtures.

Aviation

The Department of Transport and Communications has contracted for a total of four standard power transponders which will be used to establish a fully duplicated network of reliable voice and data links between 46 manned air traffic control facilities and 55 unmanned remote VHF air-to-ground facilities throughout Australia.

Commercial applications

Apart from the applications detailed above, AUSSAT has contracted with a number of government agencies and commercial organisations for the provision of a wide variety of services. Uses range from the provision of private network voice, video and data services to exciting applications in entertainment distribution, remote and long distance education, emergency services, health and medical services, including the use of slow scan television for diagnostic purposes.

The next generation

AUSSAT has completed the design of its second generation satellite system planned for launch in 1991–92.

The system, for which tenders were called, will comprise two much larger satellites providing increased capacity and higher power. Tenders closed at the end of 1987 and the contract will be let by mid-1988.

Apart from ensuring continuity of established services the second generation satellites will carry L Band transponders to enable the establishment of a domestic mobile satellite service. This service will be operational by 1992 and could potentially be the first such domestic service in the world.

Overseas telecommunications services

The Overseas Telecommunications Commission Australia (OTC) was formed by an Act of Parliament in 1946. OTC's principal responsibility is to provide, at the lowest possible rates, all of Australia's communications links with other countries and ships at sea. Services provided include telephone, text, data, graphics and maritime communications.

These services, for the business, social, public and private use of all Australians, are provided through OTC's investment in international cable, satellite and radio networks. OTC is a government-owned business enterprise and, as such, operates under the auspices of the Department of Transport and Communications.

OTC achieved a record turnover of $541 million in 1986–87, an increase of 14 per cent over the previous 12 months. The international telephone service provided around 73 per cent of revenue—an increase of 17 per cent, telex around 9 per cent, and leased services around 5 per cent—an increase of 15 per cent. With a staff of 2,077, profits exceeding $125 million and assets of more than $885 million, OTC continues to display the highest productivity of Australian public sector enterprises.

More detailed statistics are contained in OTC's Annual Report.

Communications networks

OTC has developed a sophisticated international telecommunications network using modern digital technology to provide direct connections to almost 200 countries, with onward connections to nearly 300.

All of Australia's worldwide communications are directed via OTC's three international gateways at Paddington and Broadway in Sydney and Scoresby in Melbourne, to the international satellite and submarine cable networks.

Through OTC's shareholding in INTELSAT, Australia is part-owner and sixth-largest user of the global communications satellite system, including operational and spare satellites in orbit above the Atlantic, Indian and Pacific Ocean regions.

OTC's earth stations are strategically placed to access communications satellites above the Indian and Pacific Oceans. There are two OTC satellite earth stations located at Perth, Western Australia, Ceduna, South Australia and Moree, New South Wales; one at Healesville near Melbourne; and one at Oxford Falls in Sydney.

Moree operations will transfer to Sydney in late 1988. This proximity to a major population centre will allow OTC to provide the best possible quality of service for international communications users.

OTC is the world's third-largest owner of submarine communications systems. Before the end of the century, it is estimated that OTC will need to provide more than 50 times its current international communications capacity. To meet this demand, OTC will invest more than $2 billion over the next ten years in the world's largest optical fibre cable network spanning the Pacific Ocean.

Wherever submarine cables come ashore, a cable station is located, linking international communications through OTC's gateways to Australia's national communications network. OTC-owned cable stations and junction points are located at Cairns, Perth, Sydney and Norfolk Island.

OTC is also responsible for all communications between Australia and ships at sea, and operates a network of maritime communications stations strategically located around Australia's coastline. OTC is a foundation member of the international maritime satellite organisation, INMARSAT, which provides high-quality voice, text and data communications for suitably equipped vessels.

Services

OTC provides voice, data, video and text communications services that link Australians to the world. These services include OTC International Direct Dial, allowing Australians to dial direct almost 200 countries worldwide; OTC Telex, which allows users to contact 1.6 million subscribers in more than 200 countries; and OTC Data Access, a service that provides access to international databases and computer-based information sharing. Other services include international facsimile, electronic mail, private networks and videoconferencing.

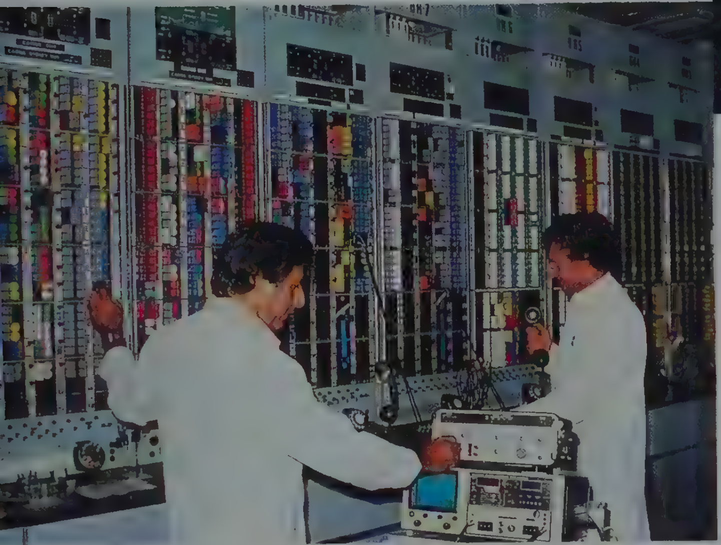
New services are constantly being developed. Teletex, for example, is a text messaging service offering high-speed transmission of fully formatted documents. It will allow computers to fully interface, and facilitate transfer of text between word-processing packages.

Radiocommunication stations

At 30 June 1987 there were 620,721 civil radiocommunication stations authorised for operation in Australia and its Territories. Of these, 291,799 were associated with land mobile services, 15,563 were fixed services, 56,074 were for marine services, 205,823 were citizens band (CB) stations and 16,751 were amateur stations. Particulars of broadcasting stations are shown on page 771.

Australian Broadcasting Corporation (ABC) news helicopter.

Linesman and microwave dish on Black Mountain Telecommunications Tower, Canberra.

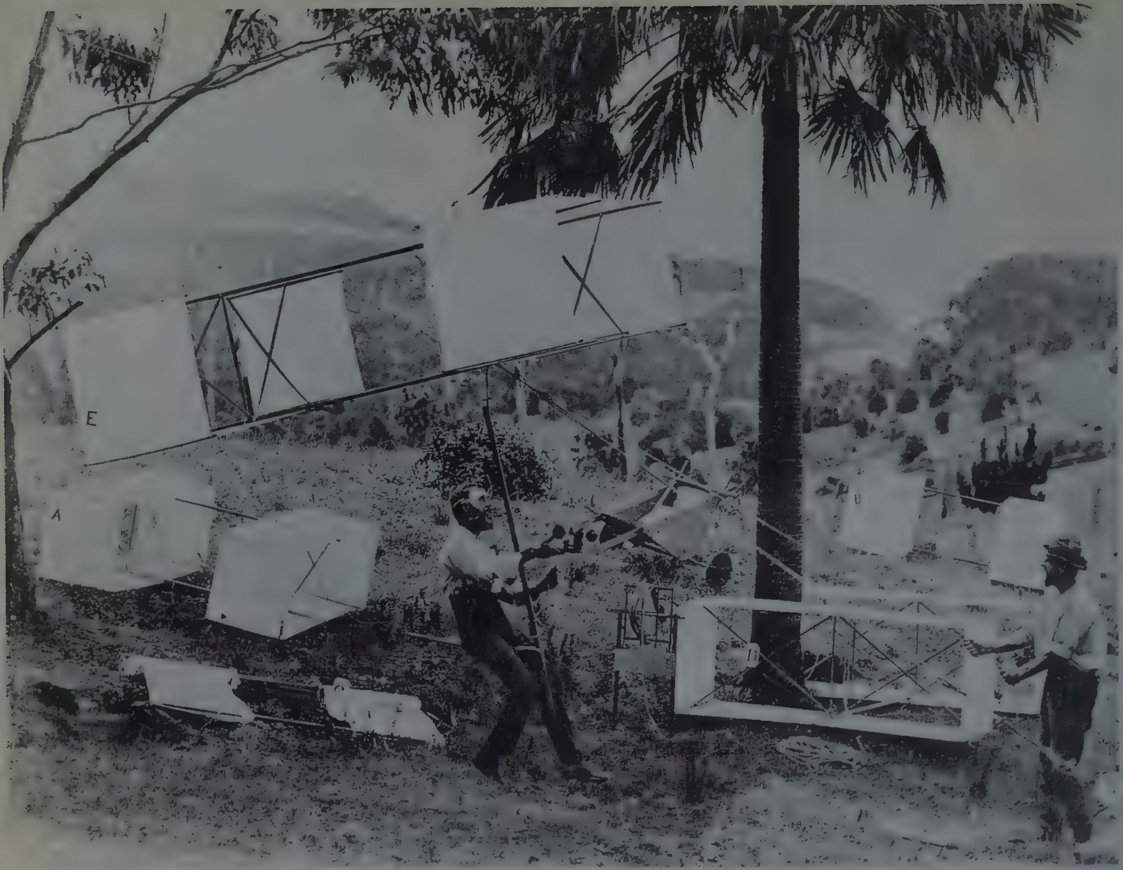


International telephone switchboard at the Overseas Telecommunications Commission (OTC), Sydney.

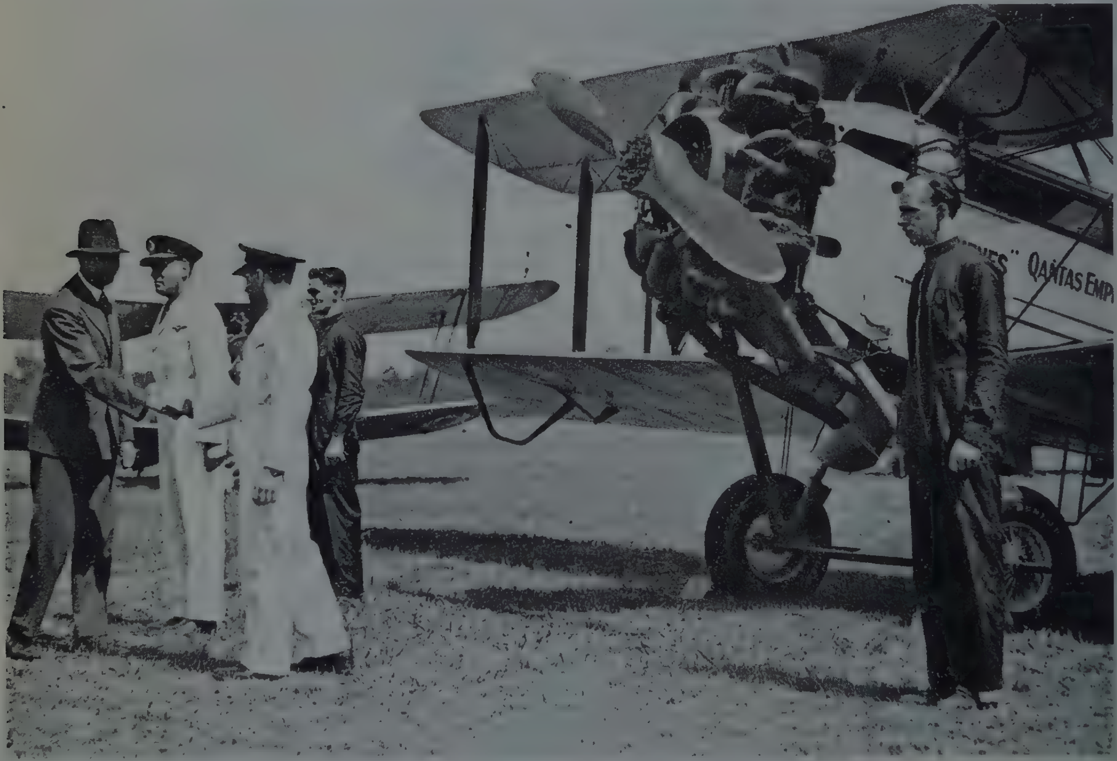
Photographs—Promotion Australia

Sports commentator at Canterbury Race-track.

Wiring harness used in *AUSSAT.*



A rare photograph of Lawrence Hargrave (1850-1915) with some of his box kites at Stanwell Park, south of Sydney, Australia. Hargrave was one of the world's early experimenters in aviation. *Promotion Australia*



H.R.H. the Duke of Gloucester at the Inauguration of the first air mail between Australia and Great Britain, 10 December 1934. *QANTAS*

Changing coaches between Bellingen and Grafton.
National Library of Australia

Railway station and yard at Palmerston, later renamed Darwin, Northern Territory, about 1890.
Promotion Australia

The telegraph receiving room at the General Post Office, Sydney, N.S.W., early in the century.
Promotion Australia

Melbourne tram painted by Mirka Mora.

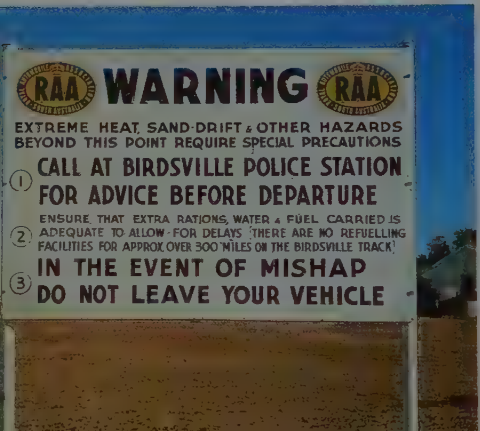
An early Australian caravan.

Puffin Billy tourist train in the Dandenong Ranges, Victoria.

Photographs—Promotion Australia

Ferries and hovercraft on Sydney Harbour.

A warning sign on the Birdsville Track.


RAA
WARNING
RAA
EXTREME HEAT, SAND-DRIFT & OTHER HAZARDS BEYOND THIS POINT REQUIRE SPECIAL PRECAUTIONS
① CALL AT BIRDSVILLE POLICE STATION FOR ADVICE BEFORE DEPARTURE
② ENSURE THAT EXTRA RATIONS, WATER & FUEL CARRIED IS ADEQUATE TO ALLOW FOR DELAYS (THERE ARE NO REFUELLING FACILITIES FOR APPROX. OVER 300 MILES ON THE BIRDSVILLE TRACK)
③ IN THE EVENT OF MISHAP DO NOT LEAVE YOUR VEHICLE

BROADCASTING AND TELEVISION

Radio and television broadcasting falls within the jurisdiction of the Commonwealth Government and, pursuant to the *Broadcasting Act 1942*, is one of the responsibilities of the Minister for Transport and Communications. Federal bodies which are involved include the Australian Telecommunications Commission, the Australian Broadcasting Corporation (ABC), the Special Broadcasting Service, the Australian Broadcasting Tribunal, the Department of Transport and Communications, the Overseas Telecommunications Commission and AUSSAT Pty Ltd.

Basically, the Australian broadcasting system comprises the following types of stations:

- national radio and television stations broadcasting programs produced by the Australian Broadcasting Corporation;
- commercial radio and land television stations operated by companies under licence;
- public radio stations operated by corporations under licence on a non-profit basis;
- stations operated under the auspices of the Special Broadcasting Service.

As from 1 January 1977, the Minister for Transport and Communications assumed responsibility for broadcasting planning, including all matters relating to the technical operation of stations, and for the investigation of interference to the transmission and reception of programs.

The commercial radio and television service

Commercial radio and television stations are operated by companies under licences granted by the Australian Broadcasting Tribunal and with technical operating conditions determined by the Minister for Transport and Communications. The stations obtain income from broadcasting advertisements. At 30 June 1987 there were 139 commercial radio stations in operation in Australia. Call signs for radio stations are prefixed by numerals indicating each State of Australia (2—New South Wales, 3—Victoria, 4—Queensland, 5—South Australia, 6—Western Australia, 7—Tasmania, 8—Northern Territory). In addition there were fifty commerical television stations and 159 commercial television translator stations in operation in Australia. A television translator station is a station of low power designed to receive the signals of another station and re-transmit them; it does not originate programs. There are nine limited coverage repeater stations in Australia operated by mining companies which transmit programs recorded on magnetic tape.

The public broadcasting service

The Broadcasting Act also makes provision for the granting of licences for the operation of public radio and television stations. At 30 June 1987, 67 public radio stations were broadcasting programs ranging from fine music to ethnic languages and programs produced by and directed towards specific communities. A number of public radio stations are associated with tertiary educational institutions. There are no public television services in operation.

The Special Broadcasting Service

The Special Broadcasting Service (SBS) was established by the Commonwealth Government on 1 January 1978 to provide multilingual radio services and, if authorised by regulations, to provide multilingual television services. A regulation authorising the provision of multilingual television services was gazetted in August 1978. The service is also empowered by the *Broadcasting Act 1942* to provide broadcasting and television services for such special purposes as are prescribed by the government.

In carrying out its functions, the SBS provides multilingual radio services to the Melbourne metropolitan area and Geelong through radio station 3EA which broadcasts in 55 languages for 126 hours per week; the Sydney metropolitan area through radio station 2EA which broadcasts in 59 languages for 126 hours per week; the provincial centres of Newcastle and Wollongong in N.S.W. through 2EA translator services; plus on relay to a small number of public broadcasting stations throughout Australia.

It also provides Australia's sole national UHF-only television network. Since inception in October 1980, SBS-TV has grown from servicing Melbourne and Sydney only, to providing a television transmission in all capital cities (except Darwin) plus several major regional centres.

Transmitting solely on Ultra High Frequency (UHF), SBS-TV is seen in Sydney, Melbourne/Geelong, Canberra, Adelaide, Brisbane, Perth and Hobart on UHF 28; Adelaide's foothills on UHF 43; North Wollongong on UHF 44; Newcastle on UHF 45; Cooma (N.S.W.), Goulburn (N.S.W.), Tuggeranong (A.C.T.), Warburton (Vic), Marysville (Vic), Queanbeyan (N.S.W.) and Sydney's eastern suburbs on UHF 58; Wollongong on UHF 59; and the Gold Coast on UHF 61. SBS-TV operates to many of these centres via AUSSAT.

Broadcasting services

The Australian Broadcasting Tribunal

The Australian Broadcasting Tribunal came into being on 1 January 1977. It is an independent statutory authority established by the *Broadcasting Act 1942* to regulate some aspects of commercial and public radio and commercial television in Australia. The Tribunal is empowered to grant, renew, suspend or revoke licences, to determine program and advertising standards applicable to licensed stations, to authorise changes to the ownership and control of licences, and to collect and make available information about broadcasting in Australia. In particular, the Tribunal is required to conduct public inquiries into the granting of licences following the invitation of applications by the Minister. The Tribunal may also conduct inquiries into the renewal of licences, the setting of standards of broadcasting practices, alleged breaches of licence conditions and other matters.

The National Broadcasting Service

In sound broadcasting, the programs of the National Broadcasting Service are provided by the Australian Broadcasting Corporation through transmitters operated by Telecom Australia on behalf of the ABC and the Department of Transport and Communications.

Technical facilities

At 30 June 1987 the National Broadcasting Service comprised 217 transmitting stations, of which 108 were medium frequency, 103 frequency modulation and 6 high frequency (excluding Radio Australia).

The medium-frequency transmitters operate in the broadcast band 526.5 to 1,606.5 kilohertz. The high-frequency stations, using frequencies within the band of three to thirty megahertz, provide services to listeners in sparsley populated parts of Australia such as the north-west of Western Australia, the Northern Territory, and northern and central Queensland.

Many of the programs provided by country stations are relayed from the capital cities using high-quality program transmission lines. A number of program channels are utilised to link national broadcasting stations in the capital cities of Australia. When necessary, this system is extended to connect both the national and commercial broadcasting stations.

At 30 June 1987, 83 of the ABC's medium-frequency stations were situated outside the six State capital cities.

Program facilities

The programs of the ABC cover a wide range of activities. The proportions of broadcasting time allocated on Radio 1 stations to the various types of program during 1985–86 were as follows: entertainment, 51.2 per cent; news, 9.3 per cent; sporting, 15.6 per cent; spoken word, 10.0 per cent; parliament, 11.4 per cent; religious, 1.2 per cent; rural, 0.6 per cent; and presentation, 0.5 per cent. By contrast, the ABC's radio 2 station's programming was: classical music, 41.1 per cent; light music, 0.8 per cent; entertainment, 5.4 per cent; drama and features, 6.3 per cent; education, 5.4 per cent; spoken word, 24.7 per cent; religious, 3.2 per cent; news, 8.1 per cent; rural, 3.4 per cent; and presentation, 1.2 per cent. Radio 3 (regional) stations feature a higher proportion of news and rural programs. Further particulars of the operations of the ABC in respect of music, drama and features, youth education, talks, rural broadcasts, news, and other activities are shown in the Corporation's Annual Report.

Overseas Broadcasting Service

There are six high-frequency stations at Shepparton, Victoria, three at Darwin, Northern Territory and three at Carnarvon, Western Australia which provide the overseas service known as Radio Australia. As in the case of the National Broadcasting Service, these stations are maintained and operated by Telecom Australia, and their programs are arranged by

Radio Australia. The programs, which, as well as entertainment, give news and information about Australia presented objectively, are directed to most parts of the world but with special emphasis on Asia and the Pacific. They include sixty news bulletins a day. The overseas audience has been quite substantial in recent years, as evidenced by a large number of letters from listeners abroad (169,476 in 1985–86 and 178,231 in 1986–87), Radio Australia broadcasts in nine languages—English, Indonesian, Japanese, Tok Pisin, Thai, French, Standard Chinese, Cantonese and Vietnamese.

BROADCASTING STATIONS, 30 JUNE 1987

Type of station	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
National—									
Medium frequency (AM)	26	9	22	10	24	6	6	5	108
High frequency (HF)	—	—	2	—	1	—	3	—	6
Frequency modulation (FM)	11	8	36	3	37	2	5	1	103
Overseas—									
Short wave (Radio Australia)	—	6	—	—	3	—	3	—	12
Commercial—									
Medium frequency (AM)	47	22	37	10	21	9	9	3	158
Frequency modulation (FM)	2	2	2	1	1	—	1	—	9
Public broadcasting—									
Medium frequency (AM)	1	—	1	1	1	—	—	1	(*a*)5
Frequency modulation (FM)	30	10	6	6	2	5	6	1	66

(*a*) Includes broadcasting stations 2EA and 3EA operated by the Special Broadcasting Service.

Television services

The National Television Service

The National Television Service is provided by the ABC through transmitters operated by Telecom Australia on behalf of the ABC and the Department of Transport and Communications. The first national station (ABN Sydney) commenced regular transmission on 5 November 1956.

The television programs provided by the ABC cover a wide range of activities. The proportions of television time allocated among the ABC's various departments during 1986–87 were as follows: drama, 11.9 per cent; children, 25.2 per cent; current affairs, 9.5 per cent; sporting, 13.2 per cent; news, 3.6 per cent; light entertainment, 1.4 per cent; education, 13.7 per cent; popular and video music, 7.8 per cent; religious, 1.2 per cent; arts, 4.3 per cent; and presentation, 4.4 per cent.

During 1986–87, nine new television translator services went into operation—two in New South Wales, two in Victoria, one in Queensland, two in South Australia and two in Tasmania.

Colour television

Colour television (PAL) was introduced in Australia late in 1974 and services became fully effective in March 1975.

TELEVISION TRANSMITTER STATIONS, 30 JUNE 1987

Type of station and location	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Total*
National—									
Metropolitan television	4	6	2	4	2	2	1	4	25
Country television	64	25	109	21	64	21	20	—	324
Total, National	*68*	*31*	*111*	*25*	*66*	*23*	*21*	*4*	*349*
Commercial—									
Metropolitan television	9	16	3	6	2	2	1	2	41
Country television	56	25	45	5	24	18	3	—	176
Total, Commercial	*65*	*41*	*48*	*11*	*26*	*20*	*4*	*2*	*217*

THE IMPACT OF TECHNOLOGY ON COMMUNICATIONS

(*This special article has been contributed by the Department of Transport and Communications—written by Ethne McLeod*)

Most parts of Australia are at least 19,000 kilometres from Western Europe, the source of most of her people, equipment, institutions and ideas. Its coastline stretches over 19,000 kilometres and encloses almost as much land as the U.S.A. Communication, therefore, was seen as the lifeblood of a distant colony, alleviating the sense of exile and excommunication, and ultimately has had a crucial influence on Australia's development.

In the first days of colony, letters bound Australia to Britain, carrying social, economic, political and scientific information. No post office existed in Sydney for the first twenty-one years of the colony's life, and mail was handled through ad hoc private arrangements which were subject to widespread abuses. In 1821, New South Wales passed legislation to regulate the postage of mail, in 1828 the office of Postmaster was created for Parramatta, Campbelltown, Liverpool, Penrith, Windsor, Bathurst and Newcastle, thus reflecting the spread of settlement in the colony. The real pacesetter, however, was Tasmania, which in 1828 appointed a Committee of Inquiry into postal reform and, four years later, established a postal service as a government department with the other colonies quickly following suit.

By 1850 New South Wales, Victoria, Queensland, Western Australia, South Australia and Tasmania were extremely urbanised with most of the population living in cities, towns or villages. The gold rushes of the 1850s placed great strains on mail services resulting from the influx of people. Within each colony, the creation of post offices followed the movement of the population. These post offices were staffed, usually on a part-time basis, by men and women drawn from all walks of life and all sectors of the community.

In the mid-19th century a semaphore system was the fastest known means of communication, although this optical telegraph had several drawbacks. It was labour-intensive, totally ineffective at night, and rain, fog, mist and snow dimmed its power. The 1850s, however, saw the advent of electric telegraphy which transformed the business of communication in Australia by adding the crucial element of speed. In 1853 Samuel McGowan brought morse to Australia and the 1860s saw the spread of the telegraph throughout Australia.

By 1869 a distinct pattern had emerged in Australia with telegraph lines concentrated around capital cities and market towns, goldfields and denser pastoral and agricultural settlements. Smaller country towns were channeled into arteries that bridged capital cities. All lines were government-owned and administered in each colony by a department of electric telegraph which was joined to other State responsibilities and departments.

The effect of the new technology was seen in communication itself. For example, newspapers carried information transmitted by telegraph. The telegraph also presented intelligence from neighbouring colonies, news of movements of shipping, the price of goods, and reports from Parliament. The business community rapidly became the pivotal point for the demand for telegraph services as city and country-town offices became commissioning points for orders and centres of market and banking intelligence. The telegraph can also be seen as an important element of central government in the large colonies as a medium for issuing instructions and orders and announcing appointments.

South Australia actively sought to attract support for a link to the telegraph line which stretched overland from England to India. Sturt's journey through the Northern Territory provided the route and in 1872 the continent was spanned by the line which led to the development of Alice Springs and Darwin as repeater stations and provided further bases for exploration of the continent. In 1872, the telegraph cable from Europe and Asia was ultimately linked to the southern cities.

Overseas cable had an immense impact on the Australian colonies. Through fast communication, it generated economic development in the colonies and was a pervasive agent of social change. The overseas cable connection spurred foreign investment in the 1880s and was central to the growth of the business community. By the end of the century, the colonies dovetailed more closely with Britain economically, while at the same time trade connections with Asia were enlarged. The telegraph became a tool of business and commerce and the foundation of a new information society in Australia.

Development of telephones paralleled the growth of the telegraph system. Telephones were a technology that played a prominent and enhancing role in the lives of women, who immediately entered the workforce of telephony. This trend began with the move of employing postmistresses in country towns and extended gradually to telegraphy. The pattern set in the United States of America was transferred, although with some cultural resistance, to Australia, continuing the trend of opening avenues of employment for women established through the mechanisation of factories. The progress made by women in telegraphy and telephony—both skilled operations requiring training and examinations and endowed with status traditionally beyond the reach of women—marked a striking departure in colonial industrial practice and a notable union between women and new communications technologies.

In 1901 the Constitution empowered the Commonwealth Government to take over, control and administer Posts and Telegraph Departments of each State of the new Commonwealth and 1 March 1901 saw the establishment of the Postmaster-General's Department (PMG) from the former separate and distinctive colonial departments thus creating a national monopoly.

The development of the new Marconi Radio System saw the Department seek absolute control of the new communications system and in 1905 a short Wireless Telegraphy Act, giving the Department control, was passed.

Telecommunications growth was interrupted by World War I although technological advance was stimulated. The outbreak of War caused the rapid growth of wireless stations around the Australian coastline and, by the end of World War I, technological developments saw new prospects for telegraphy and telephony emerging overseas. The 1920s saw the implementation of automatic exchanges and the then Secretary of the Postmaster-General's Department, Mr H. P. Brown, instigated many strategic planning decisions that modernised Australia's telecommunications systems; for example, the systematic extension of automatic exchanges and the development of long-line interstate trunk services.

In March 1922 agreements for wireless telephony to commence were signed and Hughes became the first Australian Prime Minister to make a political broadcast with a speech made at Bendigo and transmitted to an outside audience.

In 1923 it was decided that broadcasting stations would be permitted to forward programs on definite wavelengths to people with 'sealed sets' locked on to one wavelength. Broadcasting began officially on 23 November 1923. However, people wished to listen to any service and the advent of crystal radios helped beat the monopoly of 'sealed sets'. Revised regulations were issued under the Wireless Telegraphy Act in July 1924. A dual system of Class A stations (funded by listeners' license fees) and Class B (other) stations was developed and formed the basis for Australian wireless and television broadcasting. A system also developed whereby any person holding a license could operate any type of receiving equipment for an annual fee. In mid-1928 the concept of a national broadcasting service developed. July 1932 saw the advent of the Australian Broadcasting Commission (ABC) whereby a Government-backed broadcasting system integrated the technical functions of the PMG with the evolution of the ABC.

Australia's overseas telephone system came into being despite economic problems, and technological progress continued. Gradually Australia-wide telephone links were developed and 1934 saw the development of the first overseas airmail service. Telephones helped the development of the Royal Flying Doctor Service which was further stimulated by the growth of the pedal wireless.

World War II has been called the telecommunications war with radar, telephony and telegraph all playing an important role. Increasingly, defence needs shaped telecommunications usage and the War opened up a new creativity in PMG's telecommunications technology from a dependence on carrier technology to Australian designed systems.

From the post-war years, and especially during the 1950s, telecommunications services offered many new developments—automatic telephony and telegraphy, television, electronic computers, microwave radio, rocketry and transistors.

Increasingly, telecommunications equipment was manufactured locally and progressive automation continued.

The Overseas Telecommunications Commission (OTC) was established and Parliament was broadcast for the first time in 1946. In 1953 legislative authority was given to the establishment of both national and commercial television stations. The first commercial television broadcast was from TCN 9 in Sydney on 16 September 1956. The 1956 Olympic Games in Melbourne gave impetus to all forms of telecommunications in Australia.

Television reached all Australian capital cities except Darwin by 1962 and spread outwards to the countryside. Planning commenced for a dual national and commercial system with all the attendant installation of equipment and towers. Radio engineering and research continued as a major area of PMG work, and the ABC began broadcasting on shortwave bands as well as overseas through Radio Australia.

In April 1965 INTELSAT I provided satellite telecommunications services between North America, Britain and Europe. INTELSAT II, launched in October 1966, linked in Australia. The OTC earth station at Carnarvon in Western Australia was linked into the American space program and in 1968 OTC opened a new earth station at Moree that provided a link for integrated data, telephone, telegram, telex and television circuits which effectively linked Australia to the rest of the world.

In 1964 PMG had entered the transmission business using telephone lines to transmit computerised information between stock exchanges and some business houses. In 1969 PMG's 'Datel Service' became the first common user data network using transmission over an ordinary switched telephone network or over privately leased lines. Eventually, a Royal Commission into the Post Office in April 1974 recommended the creation of an independent body solely responsible for telecommunications and, on 1 July 1975, the Australian Telecommunications Commission (Telecom) came into operation.

From the 1960s on, however, PMG had, like other authorities overseas, turned toward the possibility of enlarging and diversifying land-based telecommunications systems through domestic satellite technology. By the late 1960s pilot studies on NASA equipment had demonstrated the feasibility of a geostationary satellite linked with an Australian network, which in addition offered the possibility of taking telephone connections to remote and inhospitable regions.

In 1972 a Special Task Force was established to investigate the possibilities of satellite usage. The Telecom National Satellite Communications System Study was released in November 1977 and suggested that in terms of technical feasibility the proposal should go ahead, though not on economic grounds. In August 1977, as a result of a private report, a political case was mounted on the grounds that television services to areas not currently served could not be provided through the existing communications network, which was neither satisfactory, nor capable of providing such a service to the Australian people. Also in November 1977, a Commonwealth Government Task Force proposed the introduction of a domestic satellite system. The then Minister for Communications, the Hon. A. A. Staley and the Prime Minister, the Rt. Hon. Malcolm Fraser, actively supported the Task Force Report.

In 1981 the Government formed a company (AUSSAT) to own and operate Australia's National Satellite System; shares in the company are jointly held by the Commonwealth Government and Telecom. In 1985 AUSSAT had two satellites launched and they are now fully operational. The domestic satellite system will ultimately complement, diversify and add resilience to existing ground-based communications systems. Significantly it will enable communications throughout the country—from the largest cities to the most isolated areas.

ROADS: THE BEGINNING AND NOW

(This special article has been contributed by the Department of Transport and Communications)

When the first settlers arrived in Australia two hundred years ago, they set in motion an approach to road construction which has culminated in the biggest civil engineering project in the country's history—the National Highway system, 16,000 kilometres of highway that has cost the nation $5,100 million.

Until the 1840s, most of Australia's towns were on the coast and relied upon the sea for transport. Consequently, road transport was undeveloped. Before that, bullock tracks developed into roads, but they were primitive and badly maintained.

In New South Wales, Governor Macquarie developed a trunk road system which extended as the settlement spread. By 1850, New South Wales had three trunk systems that extended inland—from Sydney to the Yass Plains, from Sydney to Bathurst, and from Morpeth to the upper reaches of the Hunter River. However, road building was slow due to shortage of materials, deterioration caused by climatic conditions, and administrative and financial problems.

As roads improved, coach services were introduced, the major one being Cobb and Co. which operated for almost 70 years.

Even with the advent of the first petrol cars at the turn of the century, travel by rail was still the preferred mode of transport. But as cars improved, it became apparent that road transport would become more popular.

The task of building and maintaining roads became too much for local governments and the more important roads were placed under State government control in the 1920s. Commonwealth assistance was first provided to the States for road making in 1923. By the 1930s, road transport was competing strongly with the railways.

World War II saw a reassessment of roads. Before the War, emphasis had been on well made roads in the main centres of population, but now the emphasis shifted to sparsely populated areas for defence purposes.

The post-war period saw the need for a modern, efficient road system to establish, build and sustain economic growth. The seed had been planted and now, more than thirty years later, the National Highway is all but completed.

Commenced in 1974, the National Highway system links each adjacent State capital, Adelaide with Darwin, and Cairns with Brisbane, as well as linking Hobart to Burnie in Tasmania.

In 1974 as much as 3,900 kilometres of the National Highway was unsealed and deficient, and the length of divided carriageway was less than 300 kilometres. Periodic flooding in outback areas often resulted in road closures, causing long delays to traffic. Now, with the majority of the highway network sealed, the situation has been improved significantly.

All funding for the construction and maintenance of the National Highway system is met by the Federal Government, with State and local road authorities acting as design, construction and maintenance agencies. In addition, the Federal Government provides substantial funding to the States and local government authorities for arterial and local roads. Federal funding for roads comes from a predetermined share of fuel excise taxes.

Following the expiry of the 1981 Roads Grant Act on 30 June 1985, the Australian Land Transport Program (ALTP) began in July 1985, and this five-year program continues to assist the States and Northern Territory in the construction and maintenance of roads.

In 1982 the Australian Bicentennial Road Development (ABRD) Program was introduced to achieve a substantial upgrading of the Australian road network by 1988.

In 1985–86, $559.3 million was provided for National Roads. Of this, $377.3 million was for construction and maintenance projects under ALTP, and $182 million was for construction projects under the ABRD program.

The busiest interstate route is the Hume Highway section of the National Highway, 816 kilometres linking Sydney and Melbourne, of which over 40 per cent is dual carriageway. It carries more than 1,000 heavy commercial vehicles daily in addition to other traffic. Canberra, the national capital, is linked to the Hume Highway by the Barton and Federal Highways.

Melbourne and Adelaide are linked by 720 kilometres of the Western and Dukes Highways, and the South East Highway sections of the National Highway.

Adelaide and Darwin are joined through central Australia by the Stuart Highway section of the National Highway over a distance of 3,014 kilometres. Until 1979, the 925 kilometre South Australian section was little more than a dirt track.

From Adelaide, the Adelaide-Port Augusta Road, the Eyre Highway, Coolgardie, Esperance and the Great Eastern Highway sections of the National Highway stretch 2,675 kilometres along the southern edge of the Nullabor Plain to Perth.

Between Perth and Darwin, the National Highway comprises the Great Northern, Duncan and Victoria Highways covering 4,000 kilometres.

The Barkly Highways section of the National Highway connects Tennant Creek in the Northern Territory to Mt Isa in Queensland, and on the same route, the Flinders, Landsborough and Warrego Highways connect Mt Isa to Brisbane over more than 2,400 kilometres.

In Northern Queensland, Cairns is linked to Brisbane by the Bruce Highway section of the National Highway over 1,690 kilometres. The Cunningham and New England Highway, and the Newcastle-Sydney Freeway (over 1,000 kilometres) provide a link between Brisbane and the Southern States.

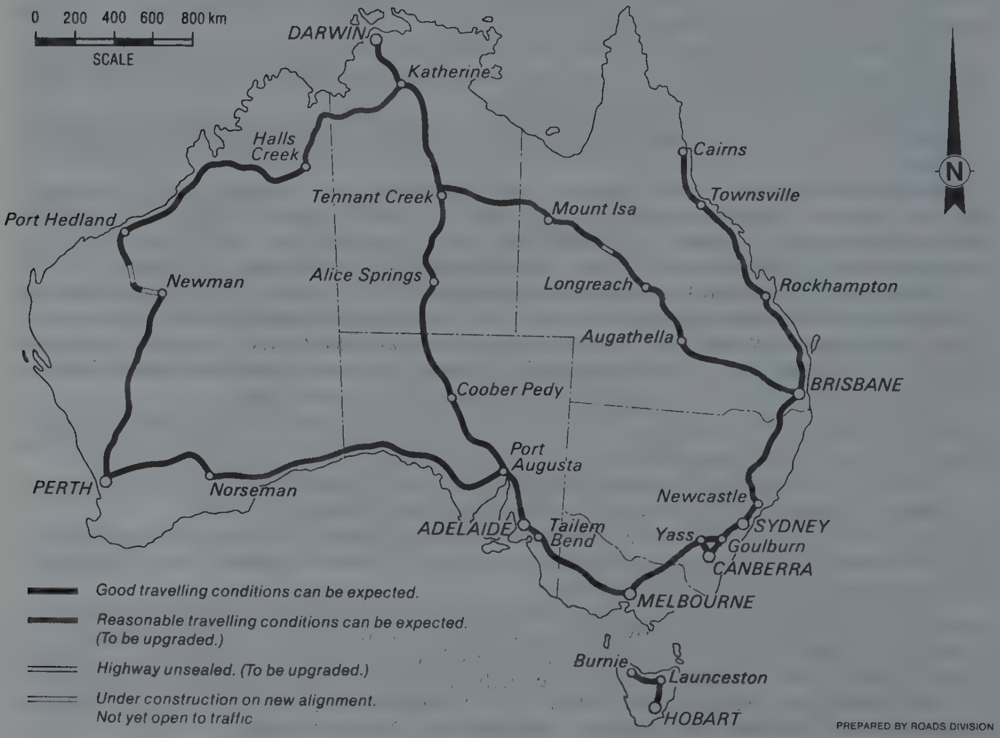
In Tasmania, the National Highway links Hobart and Launceston by the Midland Highway over 187 kilometres, and Launceston and Burnie by the Bass Highway over 137 kilometres.

Of the 804,700 kilometres of roads open for general traffic in Australia, 266,600 kilometres, or 33 per cent, are sealed, while the remainder are either gravel or earth pavements.

Victoria, the second smallest State, has the largest percentage of sealed roads with 41 per cent. Tasmania, the smallest State, and New South Wales each has 38 per cent. Queensland has 31 per cent, Western Australia 28 per cent, South Australia 22 per cent, Australian Capital Territory 96 per cent, and the Northern Territory 26 per cent.

Established in just 200 years, Australia's large road network of over 800,000 kilometres services a population of 16 million who drive nine million cars and motorcycles and over half a million trucks.

THE NATIONAL HIGHWAY — CONDITION AT JUNE 1987


0 200 400 600 800 km
SCALE
DARWIN
Katherine
Halls Creek
Tennant Creek
Mount Isa
Cairns
Townsville
N
Port Hedland
Newman
Alice Springs
Longreach
Rockhampton
Augathella
BRISBANE
Coober Pedy
Port Augusta
PERTH
Norseman
Newcastle
ADELAIDE
Tailem Bend
Yass
SYDNEY
Goulburn
CANBERRA
MELBOURNE
Burnie
Launceston
HOBART
Good travelling conditions can be expected.
Reasonable travelling conditions can be expected. (To be upgraded.)
Highway unsealed. (To be upgraded.)
Under construction on new alignment. Not yet open to traffic
PREPARED BY ROADS DIVISION

Department of Transport and Communications

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CHAPTER TWENTY-TWO

SCIENCE AND TECHNOLOGY

Science and technology directly influence the strength and competitiveness of industry by providing a basis for technological change and thereby encouraging economic growth and development. They can be seen as making major contributions to the achievement of many of Australia's social, economic and industrial goals.

There are many organisations in Australia concerned in some way with the development of science and technology in Australia.

The Commonwealth Government's conviction of the importance of science and technology is reflected in the functions of the Department of Industry, Technology and Commerce. Apart from having general responsibility for science and technology, the Department is concerned with the development and maintenance of Australia's scientific and technological capability.

A number of other Commonwealth Government organisations either support or carry out scientific and technological activities. State governments are also involved in science and technology via State government departments, science and technology councils and other organisations. Non-government organisations participating in scientific and technological activites include higher education institutions, professional and learned bodies, private organisations and industry groups.

Information on scientific and technological activities presented in this chapter includes:

- Australian Bureau of Statistics data on resources devoted to research and experimental development (R&D) and other innovative activities. The R&D surveys cover organisations in the business enterprise, general government, private non-profit and higher education sectors.
- Department of Industry, Technology and Commerce statistics on expenditure on R&D and other scientific and technological activities carried out or funded by Commonwealth Government organisations.
- Commonwealth Tertiary Education Commission statistics on tertiary student enrolments.
- Australian Bureau of Statistics information on manufacturing industry technology operations and trade categorised into high technology, medium technology and low technology (industries or commodities).

A special article on science and technology in Australia is included at the end of this chapter.

The Department of Industry, Technology and Commerce—DITAC

Following the Administrative Arrangements Order of 24 July 1987, the Industry, Technology and Commerce portfolio has primary responsibility for advising the government and implementing policy in relation to Australian science and technology; manufacturing and service industries; export services and customs and excise.

Within the portfolio, DITAC is the central point of contact for industry, unions, other Commonwealth departments, and State and local governments on matters relating to manufacturing and service industries. DITAC incorporates parts of the former Departments of Science, Trade, and Housing and Construction. The major scientific and technological aspects of the portfolio include the following bodies and activities.

The Commonwealth Scientific and Industrial Research Organisation—CSIRO

CSIRO was established as an independent statutory authority by the *Science and Industry Research Act 1949*. The Act has been amended on a number of occasions since then, but the most significant amendments were made in 1978, following the government instigated 'Birch Committee of Inquiry'. More recently, in November 1986, it was amended to reflect the decisions on the recommendations of the Review of Public Investment in Research and Development in Australia, including specifically CSIRO, carried out by the Australian Science and Technology Council (ASTEC).

The decisions announced by the Government in 1986 and reflected in the 1986 amendments to the Act, confirm that CSIRO's primary role is to continue as an applications oriented research organisation in support of major industry sectors and selected areas of community interest, but with a stronger commitment to the effective transfer of its results to users. The most recent amendments have also included changes to the top management structure and the Organisation's advisory mechanisms.

Briefly, CSIRO's primary statutory functions are to:

- carry out scientific research relevant to Australian industry, the community, national objectives, national or international responsibilities, or for any other purpose determined by the Minister;
- encourage or facilitate the application or utilisation of the results of such researchs.

Other functions include dissemination and publication of scientific information, international liaison in scientific matters, and provision of services and facilities.

The research work of the Organisation is carried out in Institutes, each headed by a Director and each specifically established to undertake work in support of industry or community interest sectors of the Australian economy. Institutes are comprised of Divisions, which are each responsible for broad programs of research in support of the objectives of the Institute.

Institute of Information and Communication Technologies: Divisions of Information Technology, Radiophysics, Mathematics and Statistics; CSIRO Office of Space Science and Applications.

Institute of Industrial Technologies: Divisions of Manufacturing Technology, Materials Science and Technology, Applied Physics, Chemicals and Polymers.

Institute of Minerals, Energy and Construction: Divisions of Construction and Engineering, Exploration Technology, Mineral and Process Engineering, Mineral Products, Coal Industry, Fuels Production.

Institute of Animal Production and Processing: Divisions of Animal Health, Animal Production, Wool Technology, Tropical Animal Production, Food Processing, Human Nutrition.

Institute of Plant Production and Processing: Divisions of Plant Industry, Tropical Crops and Pastures, Horticulture, Entomology, Soils, Forestry and Forest Products.

Institute of Natural Resources and Environment: Divisions of Water Resources Research, Fisheries, Oceanography, Atmospheric Research, Wildlife and Ecology; Centre for Environmental Mechanics.

On 30 June 1987, CSIRO had a total staff of 7,347 in more than 100 locations throughout Australia. About one-third of the staff were professional scientists, with the others providing technical, administrative or other support.

Commercial activities

The main aim of CSIRO's commercial activities has been to achieve the maximum possible economic and social benefits to Australia by contributing to commercially viable innovation. During recent years, there has been a greater emphasis on research that can be exploited by Australian industry, or that will bring more substantial benefits to Australia. The selection of commercial partners with the capability of developing, applying and marketing innovations has become even more significant in the planning and evaluation of research in CSIRO. A second but important aim of CSIRO's commercial policy is to continue to maximise CSIRO's revenue from its commercial transactions.

SIROTECH Limited

In the first eighteen months of its operation, SIROTECH has come to the forefront in technology transfer in Australia. SIROTECH was established by CSIRO in 1985 to help transfer research results with sound commercial potential to the Australian industry most suited to making use of those results. SIROTECH has been able to help identify and evaluate commercial opportunities, package and market them to industry and negotiate terms and finalise agreements. As a company set up to 'act commercially', it has continued to develop its capabilities in patent and intellectual property management, technology evaluation, market assessment and advice and successful negotiation of commercial agreements. By mid-1986 more than 60 commercial agreements had been negotiated in medium to large-scale projects as well as smaller projects.

CSIRO's budget for 1986–87 was $446m.

The Australian Nuclear Science and Technology Organisation—ANSTO

ANSTO was established on 27 April 1987 as a statutory authority by the Commonwealth Parliament under the *Australian Nuclear Science and Technology Organisation Act Number 3 of 1987*. ANSTO replaces the Australian Atomic Energy Commission, which had been in existence since 1953.

ANSTO is Australia's national nuclear organisation. It has its headquarters and all but a few of its staff at the Lucas Heights Research Laboratories, 30 kilometres south-west of Sydney. Of its staff of 1,050 about 270 are qualified scientists and engineers. Its mission is to benefit the Australian community by the development and application of nuclear science and technology in industry, medicine, agriculture, science and other fields. In this mission, ANSTO maintains a high regional and international standing in nuclear matters and carries out tasks as required by the Commonwealth Government.

The four major activities of ANSTO are:

- the conduct of research and development in the major areas of industrial applications, biomedicine and health, and environmental protection;
- the provision of expert technical advice;
- the operation of national nuclear facilities;
- the commercial marketing of products and services.

ANSTO's annual expenditure is in the order of $56m, with sales revenue of approximately $4m.

The 150 per cent Tax Concession for Research and Development

As an encouragement to the private sector to carry out more R&D, the Government offers a tax incentive for certain R&D expenditures. The concession applied from 1 July 1985 and is available to eligible companies undertaking R&D in Australia. Allowable R&D expenditures over $50,000 per annum attract a 150 per cent taxation deduction, with a phased scale for deductibility of amounts less than $50,000 but more than $20,000.

The Grants for Industry Research and Development Scheme

The scheme provides grants to support approved R&D projects in three areas, being: discretionary grants of up to 50 per cent of agreed costs, generally for companies unable to benefit from the tax concession; generic technology grants, providing up to 90 per cent of agreed costs, designed to support new technologies with particular significance for industry development; and national interest agreements, providing up to 100 per cent of costs for R&D projects with significant benefits for Australia. The scheme applied from 1 July 1986 and replaced the Australian Industrial Research and Development Incentives Scheme.

Patent, Trade Marks and Designs Office

The office protects Australia's technological and commercial interests through the industrial property program. It also protects the public interest through examination and registration of patent, trade mark and design applications and provides a patent information service.

The National Industry Extension Service—NIES

NIES is a joint Commonwealth and State Government initiative established in July 1986 to upgrade and co-ordinate the wide range of advisory and assistance services available to industry. NIES is helping Australian firms achieve international competitiveness by encouraging the adoption of improved technologies, management and business practices. Through a single contact point in each State and Territory, firms can be provided with information, or referred to appropriate specialist sources of advice, on issues that include strategic business planning, product innovation, design, quality, the application of new technologies, marketing, the contribution of labour, and issues of particular concern to small business. Financial assistance may be provided towards the cost of business planning services.

Funds are provided through DITAC's Budget allocation to the States and Territories to assist them in delivering NIES services to industry. In addition, funding is provided for the national NIES program, which includes the development of new elements of the program and assistance to five non-profit providers of extension services: the Technology Transfer Council, Australian Productivity Council, Industrial Design Council of Australia, Standards Association of Australia, and National Association of Testing Authorities.

The Management and Investment Companies Program

In 1984, the Government established the Management and Investment Companies Licensing Board to encourage the development of a venture capital market in Australia. The main objective of the program is to attract management and financial support for the start-up and early growth of those Australian based enterprises which have the potential to grow rapidly into substantial businesses, are export oriented and use innovative technology. To 31 August 1987, over $102m had been invested in 125 businesses in a wide variety of industries.

The Bureau of Industry Economics

Primary responsibility for the Department's Industry Research Program lies with the Bureau of Industry Economics, which was established in 1977 as a centre for research into the Australian manufacturing and commerce sectors of the economy. The Bureau is assisted in devising its research program by a Council of Advice, comprising business and union leaders and prominent academics.

The Bureau's research program is concerned with a broad range of industry policy issues, including:

- individual industry studies as well as the investigations of general issues affecting a broad range of manufacturing and service industries;
- forward-looking studies on the likely future development of Australian industry, as well as detailed investigations of the factors responsible for the performance of industry in the recent past;
- aspects of industrial technology and production as well as pricing and marketing issues.

Evaluation of the effectiveness of existing government policies and programs is an important part of the Bureau's research. The Bureau also contributes to policy reviews, including Industries Assistance Commission and other public inquiries, and assesses the economic aspects of papers put to it by industry and trade unions.

The Snowy Mountains Engineering Corporation

A statutory authority operating on a commercial basis, the Corporation utilises the professional engineering expertise developed during construction of the Snowy Mountains Hydro-electricity Scheme. It has completed nearly 1,300 projects in 45 countries, including Australia.

The Australian Institute of Marine Science

The responsibilities of the Institute are to conduct research and to arrange and co-operate with other institutions or individuals, in conducting marine science research as well as to collect and disseminate information relating to marine science. Its objectives are to advance the development of national knowledge of the marine environment; to communicate this knowledge so that it can be applied to the development, conservation and management of the marine resources, to create opportunities for technological and commercial development and to foster co-operation between researchers with similar interests.

The Institute's core research is organised into four closely integrated programs—coastal processes and resources, reef studies, environmental studies and marine systems analysis. These core research programs have been augmented by funding from other agencies which allows for continuing major research on the crown-of-thorns starfish phenomenon, accelerated research on weather records in corals and mangrove forests and assistance to ASEAN countries to develop technologies for assessing their coastal marine resources, especially mangroves and coral reefs.

The Institute's total budget in 1987–88 was $11.4m, of which $1.2m was funded from other agencies. Its core staff of 106 is supplemented by some 22 staff funded by other agencies.

The Commission for the Future

The Commission's objective of raising community awareness of all aspects of the social and economic impacts of technological change is based on the premise that industrial restructuring and technological development alone are insufficient for the development of a productive Australian culture. A need exists for an information and education program directed at increasing support for, and understanding of, scientific and technological change and long-term options for Australia.

The National Building Technology Centre

The objectives of the Centre are to develop and promote innovative and cost-effective building practices and to advise on formulation of appropriate codes and standards.

The Australian Space Board

The Board was established to advise the government on space R&D priorities in accordance with the government's broader industry and technology policies. Part of the Board's functions include supervising and accounting for National Space Program activities funded through the Department. Those activities include providing financial incentives to companies for involvement in space-related technologies and R&D.

The National Standards Commission

The National Standards Commission is responsible for determining the legal units and standards of physical measurement, co-ordinating the national measurement system and approving measuring instruments for use in trade. In September 1984, the Weights and Measures (National Standards) Act was amended and the title changed to the National Measurement Act. The amendments clarified the functions of the Commission and transferred to it responsibility for completing the introduction of the metric system of measurement into Australia. This was previously a function of the Metric Conversion Board.

Following a review of the trade measurement system in 1984, the Commission has been chairing a working party of State and Territory Weights and Measures Authorities to develop Uniform Trade Measurement Legislation for Australia.

Expenditure

Science and technology (S&T) expenditures within the portfolio of the Minister for Industry, Technology and Commerce for 1986–87 were as follows:

Intramural (in-house) R&D expenditure $454m.
Extramural (grants, contracts, etc.) R&D expenditure $60m.
S&T (including R&D) expenditure $688m.

Other Commonwealth Government science and technology activities

Many other Commonwealth Government agencies play a significant role in the science and technology area. A number of these agencies are involved with R&D activities either as funders, performers or both; others are active in the S&T areas of information dissemination, scientific services and scientific training.

The Australian International Development Assistance Bureau

The Bureau provides funds under a number of arrangements to provide scientific development and training in many third world countries. In 1986–87 the Bureau spent $219m on science and technology, $39m of which was provided as R&D funding.

The Defence Science and Technology Organisation—DSTO

DSTO is a major R&D performer in the defence field in Australia, spending $148m on its own research programs in 1986–87. Other S&T activities include provision of scientific and technological advice on defence policy matters and equipment, and development and maintenance of a skill base in defence science and technology.

The Commonwealth Department of Employment, Education and Training

The Department funds scientific and technical training in tertiary institutions via the Commonwealth Tertiary Education Commission. In addition, the Department has established the Australian Research Council to provide advice on national research policy priorities and on the co-ordination of national research effort. The Council will also co-ordinate and advise on specific research funds for tertiary education institutes, post-graduate research awards and research grants and fellowship schemes.

The Commonwealth Department of Community Services and Health

The Department is the major Australian provider of medical research funds through the National Health and Medical Research Council. In 1986–87, the value of grants awarded to medical researchers was $59m. Other S&T activities of the Department include provision of funds for the National Biological Standards Laboratory ($13m in 1986–87), Commonwealth Pathology Laboratories ($17m in 1986–87) and the Commonwealth Serum Laboratories ($10m in 1986–87).

The Australian Telecommunications Commission

'Telecom Australia' operates and maintains the national telecommunications network. It is a major R&D and S&T performer ($56m and $141m respectively in 1986–87). Its R&D activities include planning and specification of Australian telecommunications requirements and the solution of technical problems arising during the operation of its telecommunication networks. Telecom's other S&T activities include planning and operation of new facilities and development of the network infrastructure.

The Australian Bureau of Statistics

The Bureau is the Commonwealth Government's central statistical authority and is responsible for providing statistical services to government and private users. Other activities include the co-ordination of statistical activities of official bodies and the provision of statistical advice and assistance to official bodies. All of the Bureau's expenditure ($164m in 1986–87) is considered to be on science and technology (predominantly data collection in the social sciences), with a small proportion ($10m in 1986–87) attributable to R&D.

The Bureau of Meteorology

The Bureau provides the national meteorological service and performs the R&D needed to maintain the service. The Bureau's total S&T expenditure for 1986–87 was $86m, of which $3m was for R&D.

The Antarctic Division of the Department of Arts, Sport and the Environment, Tourism and Territories

The Division manages Australia's Antarctic program. It organises expeditions and maintains research stations, as well as funding, co-ordinating and conducting research. The Division's S&T spending for 1986–87 was $42m and its R&D expenditure was $27m.

The Rural Industry Research Schemes

The schemes, administered by the Department of Primary Industries and Energy, cover one general and 15 specific rural industries. They provide funds for rural research and dissemination of agricultural information. Funding for most of the schemes comes equally from the Commonwealth and industry (via a levy on produce). In 1986–87, the schemes contributed $26m to rural research ($10m of which was industry funded).

The Bureau of Mineral Resources—BMR

The Bureau's main functions are to understand and assess Australian geology as a basis for mineral exploration, to be the primary information source for geoscience data, and to monitor earthquake activity and underground nuclear explosions. BMR's R&D activities are in the areas of fossil fuel, minerals and ground water; spending on R&D in 1986–87 was $30m. Total S&T expenditure in 1986–87 was $37m.

Advice on science and technology

Apart from DITAC, the most significant Commonwealth Government advisory body on science and technology is the Australian Science and Technology Council (ASTEC), a statutory authority advising the Prime Minister and government on science and technology matters. ASTEC's 1986–87 expenditure was $1.4m. For a fuller discussion of ASTEC's role and functions *see Year Book* No. 70.

State government science and technology activities

State governments are major performers and supporters of scientific and technological activities. Many States have particular departments established for the purpose of encouraging and co-ordinating the use of technology in industry (e.g. the Victorian Department of Industry, Technology and Resources). Several States (New South Wales, Queensland, Western Australia and South Australia) have also established science and technology councils which provide advice to State governments on science and technology matters and promote the expansion of technology.

In addition to fostering science and technology, many State government departments are large performers of scientific and technological activities. Traditionally, for instance, those departments involved with agriculture (e.g. the Victorian Department of Agriculture and Rural Affairs and various State departments of agriculture) spend large sums on the R&D which they perform and also have a high profile in the general S&T activities of extension and laboratory services.

The total 1984–85 expenditure for R&D carried out by State government organisations on agricultural objectives was $197m, 68 per cent of total State government R&D spending for that year. Other major areas of State government R&D activity are Forestry and Fisheries ($24m in 1984–85) and Health ($22m in 1984–85).

Tertiary education institutions' science and technology activities

Tertiary education institutions play a vital role in the two major S&T areas. These being R&D and scientific and technical training.

Universities receive direct funding for research purposes from a number of sources, the major one being the Commonwealth Government. Commonwealth funds include those administered by the Commonwealth Tertiary Education Commission (special research grants, research equipment grants); those grants and awards distributed through the Australian Research Council; and grants awarded by the National Health and Medical Research Council and through the National Energy Research, Development and Demonstration Program. Direct Commonwealth research funding for 1986 totalled $127m. Direct funds for research from other organisations and individuals totalled $58m in 1986.

Indirect research funding for universities includes both the proportion of general funds from the States Grants (Tertiary Education Assistance) Act allocated by universities to research ($104.0m in 1986) and the amount attributable to research but coming from general teaching-and-research funds (e.g. the estimated research portion of the salaries of teaching-and-research staff). The latest available figures for total university research expenditure (direct plus indirect sources) came from the ABS inter-year R&D survey for 1985 which gives an estimated expenditure of $708m.

CAE's and institutes of TAFE receive very little research funding from the Commonwealth. The Australian Bureau of Statistics measures R&D effort for CAEs ($23m in 1984) but does not survey institutes of TAFE.

Data on university and advanced education enrolments by field of study are presented in the table below. Other enrolment data for universities and advanced education and data on TAFE enrolments are presented in Chapter 10, Education. That chapter also gives a more detailed picture of higher education facilities in Australia.

Other organisations' science and technology activities

There are many other non-government organisations playing an important part in Australia's scientific and technological development. They include various learned and professional bodies such as the Australian Academy of Science, the Australian Academy of Technological Science, the Academy of Social Sciences in Australia and the Australian and New Zealand Association for the Advancement of Science. Their activities include provision of advice in the relevant scientific fields, dissemination of scientific information and enhancement of communication on scientific matters.

A number of private organisations from time to time provide advice to government on specific matters relating to science and technology. Examples from the business sector are the Australian Chamber of Manufactures, the Business Council of Australia and the Confederation of Australian Industry. Other organisations with an interest in scientific and technological issues include trade unions, industry groups with an interest in specific technologies and individual private organisations.

As performers of research and experimental development, private organisations in Australia are making an increasingly important contribution to Australia's R&D effort. Private business enterprises, for instance, spent an estimated $818m on R&D in 1985–86, a figure which, whilst still relatively low compared with the spending of comparable OECD countries, represents an increase of 26 per cent over 1984–85 expenditure. Private non-profit organisations in 1985–86 spent $47m on R&D, the majority of it on health related research.

UNIVERSITIES AND ADVANCED EDUCATION COMMENCING AND TOTAL STUDENTS BY COURSE LEVEL AND FIELD OF STUDY, AUSTRALIA, 1986

(*Source*: Commonwealth Tertiary Education Commission)

Field of Study (a)	*Commencing Students*				*Total Students*			
	Higher Degree	*Bachelor Degree*	*Other*	*Total*	*Higher Degree*	*Bachelor Degree*	*Other*	*Total*
				UNIVERSITIES				
Agriculture/Forestry	187	593	73	853	862	1,848	115	2,825
Architecture	110	848	73	1,031	590	3,272	150	4,012
Arts	1,932	18,532	2,922	23,386	6,330	52,462	4,781	63,573
Dentistry	42	244	5	291	214	1,155	9	1,378
Economics/Commerce	1,266	7,041	822	9,129	3,290	20,598	1,333	25,221
Education.	1,312	2,554	2,579	6,445	4,357	7,389	3,440	15,186
Engineering	553	3,298	261	4,112	2,143	11,564	363	14,070
Law	258	2,317	368	2,943	892	8,510	567	9,969
Medicine	422	1,682	173	2,277	1,763	8,654	244	10,661
Science	1,198	9,043	1,509	11,750	4,636	25,479	2,334	32,449
Veterinary Science	73	296	23	392	243	1,182	31	1,456
Miscellaneous	49	17	424	490	110	70	503	683
Total 1986	**7,402**	**46,465**	**9,232**	**63,099**	**25,430**	**142,183**	**13,870**	**181,483**
1985	**7,131**	**44,189**	**8,916**	**60,236**	**24,554**	**137,490**	**13,432**	**175,476**
				ADVANCED EDUCATION				
Agriculture/Forestry	107	416	1,197	1,720	157	1,152	2,777	4,086
Applied Science	1,894	5,572	2,429	9,895	3,780	14,575	5,142	23,497
Visual/Performing Arts	387	3,268	1,879	5,534	620	7,325	4,018	11,963
Architecture/Building	201	962	202	1,365	500	3,096	525	4,121
Comm/Business Studies	3,236	12,911	2,388	18,535	6,249	35,991	5,709	47,949
Engineering	640	3,407	1,047	5,094	1,289	11,011	2,774	15,074
Social Sciences/Humanities	1,381	6,402	2,127	9,910	2,550	15,598	4,790	22,938
Health Sciences	518	1,717	4,902	7,137	933	4,817	9,348	15,098
Education.	6,857	8,471	9,432	24,760	12,408	23,345	26,340	62,093
Non Award	—	—	1,941	1,941	—	—	2,404	2,404
Total 1986	**15,221**	**43,126**	**27,544**	**85,891**	**28,486**	**116,910**	**63,827**	**209,223**
1985	**13,684**	**38,613**	**26,927**	**79,224**	**26,416**	**107,528**	**61,287**	**195,231**

(*a*) Some Field of Study data may not be comparable with data previously published.

Statistics on science and technology

Expenditure and human resources devoted to research and experimental development

The Australian Bureau of Statistics' Surveys of Research and Experimental Development provide comprehensive data on research and experimental development activities in Australia by organisations in the business enterprise, general government, higher education and private non-profit sectors. They also provide some data on other innovative activities, such as technical know-how payments and receipts and patenting activity. Activities not covered by the survey include scientific or technological services, extension services, education and training, etc.

The first comprehensive survey on R&D was carried out for the financial year 1968–69. There have been five major surveys since then, the latest for which comprehensive results are available being in respect of 1984–85 (1984 calendar year for the Higher Education Sector). Less detailed data in respect of 1985–86 are available from the smaller 'inter year' R&D survey conducted by the Bureau.

The estimate of gross expenditure on R&D (GERD) carried out in Australia, as derived from the results of the 1984–85 survey, is $2,408m. This represents a 54 per cent increase compared with the 1981–82 survey. At constant (1979–80) prices, GERD increased by 19 per cent over the same period. The total estimate of human resources devoted to R&D during 1984–85 in Australia was 51,000 person years; this represented a 13 per cent increase compared with the previous survey.

See Year Book No. 70 for a detailed description of survey methods and concepts.

Definitions

The survey's definitions follow guidelines described by the OECD for national R&D surveys. The OECD defines R&D as comprising 'creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications'. The Bureau provides sector specific definitions which clarify the OECD definitions for respondents and users (*see* ABS catalogue 8112.0).

Survey results

A summary of results for 1968–69 is given in *Year Book* No. 60. Results for the second survey, 1973–74; the third survey, 1976–77; the fourth survey, 1978–79; and the fifth survey, 1981–82 are given in *Year Books* No. 61, 64, 67 and 70 respectively.

A summary of results from the 1981–82, 1984–85 and 1985–86 surveys is presented below.

RESEARCH AND EXPERIMENTAL DEVELOPMENT CARRIED OUT IN AUSTRALIA: HUMAN RESOURCES DEVOTED TO R&D BY SECTOR

(person years)

Sector	*1981–82*	*1984–85*	*1985–86*
Business Enterprise—			
Private Sector	7,478	11,121	(*a*) 12,968
Public Sector	1,054	1,342	1,449
General Government—			
Commonwealth	11,412	11,126	11,196
State	6,382	6,092	6,285
Higher Education	18,241	20,580	(*b*) 20,143
Private Non-profit	688	740	814
Total	**45,255**	**51,000**	(*a*) **52,855**

(*a*) The standard error associated with this estimate is 112.5 person years. (*b*) Excludes colleges of advanced education. Their 1984 contribution to total person years was 1,047.

GROSS EXPENDITURE ON RESEARCH AND EXPERIMENTAL DEVELOPMENT (GERD) CARRIED OUT IN AUSTRALIA: GERD AT CURRENT AND CONSTANT (AVERAGE 1979–80) PRICES

($ million)

Sector	*1981–82*	*1984–85*	*1985–86*
AT CURRENT PRICES			
Business Enterprise—			
Private Sector	319	650	(*a*) 818
Public Sector	61	87	103
General Government—			
Commonwealth	515	670	727
State	200	289	317
Higher Education	452	668	(*b*) 708
Private Non-profit	21	44	47
Total	**1,568**	**2,408**	(*a*) **2,720**
AT CONSTANT (AVERAGE 1979–80) PRICES			
Business Enterprise—			
Private Sector	240	396	(*c*) 468
Public Sector	51	56	62
General Government—			
Commonwealth	382	396	407
State	164	180	186
Higher Education	387	418	(*b*) 413
Private Non-profit	17	28	27
Total	**1,240**	**1,474**	(*c*) **1,563**

(*a*) The standard error associated with this estimate is $6.7m. (*b*) Excludes colleges of advanced education. Their 1984 contribution to current price GERD was $23.1m, and to constant price GERD, $16.2m. (*c*) The standard error associated with this estimate is $3.8m.

GROSS EXPENDITURE ON RESEARCH AND EXPERIMENTAL DEVELOPMENT (GERD) CARRIED OUT IN AUSTRALIA, 1984–85: GERD BY SECTOR BY SOURCE OF FUNDS

($'000)

		Source of funds					
Sector	*Total*	*Commonwealth Government*	*State government*	*Business enterprises*	*Higher education*	*Private non-profit and other Australian*	*Overseas*
Business Enterprise—							
Private Sector *r*	649,932	61,193	3,064	568,766	210	3,959	12,741
Public Sector	87,148	4,786	310	82,021	—	—	31
General Government—							
Commonwealth	669,940	645,773	1,134	5,837	73	13,905	3,218
State	288,832	24,223	248,378	6,329	231	9,095	576
Higher Education	667,509	623,468	8,375	10,751	393	19,097	5,425
Private Non-profit	44,133	17,679	8,190	2,094	438	11,689	4,042
Total	**2,407,493**	**1,377,121**	**269,450**	**675,797**	**1,344**	**57,746**	**26,034**

Business enterprise sector

The estimate of expenditure on R&D carried out in Australia by private and public business enterprises during 1985–86 is $921m at *current* prices. This represents a 25 per cent increase in expenditure compared with 1984–85. At *constant* (average 1979–80) prices, R&D expenditure is estimated to have increased by 17 per cent over the same period.

RESEARCH AND EXPERIMENTAL DEVELOPMENT CARRIED OUT BY BUSINESS ENTERPRISES (*a*), BROAD INDICATORS BY INDUSTRY OF ENTERPRISE(*b*)

Industry of enterprise		*Enterprises that carried out R & D (number)*		*R & D expenditure ($m)*			*Person years of effort on R & D*		
ASIC code	*Description*	*1981–82*	*1984–85*	*1981–82*	*1984–85*	*1985–86*	*1981–82*	*1984–85*	*1985–86*
11–15	*Mining (excluding services to mining)*	*23*	*31*	*22.6*	*29.2*	*n.a.*	*381*	*289*	*n.a.*
	Manufacturing								
21	Food, beverages and tobacco	72	91	14.1	27.9	n.a.	390	601	n.a.
23–24	Textile, clothing and footwear	16	26	0.8	3.8	n.a.	24	43	n.a.
25	Wood, wood products and furniture	19	29	1.7	3.4	n.a.	43	68	n.a.
26	Paper, paper products, printing and publishing	12	22	5.3	6.4	n.a.	125	139	n.a.
27	Chemicals, petroleum and coal products	128	179	57.3	91.8	97.0	1,307	1,572	1,578
28	Non-metallic mineral products	22	33	5.8	12.9	n.a.	126	223	n.a.
29	Basic metal products	27	32	27.1	46.1	67.2	672	681	889
31	Fabricated metal products	83	92	7.1	15.6	n.a.	170	309	n.a.
32	Transport equipment	54	65	48.1	94.1	128.8	1,087	1,540	1,778
334	Photographic, professional and scientific equipment	26	30	6.3	16.5	n.a.	183	283	n.a.
335	Appliances and electrical equipment	159	284	41.4	89.0	117.9	1,029	1,689	2,063
336	Industrial machinery and equipment	156	176	15.7	27.3	n.a.	443	556	n.a.
33	Total other machinery and equipment	341	490	63.4	132.8	159.5	1,655	2,528	2,888
34	Miscellaneous manufacturing	66	79	7.6	12.4	n.a.	186	253	n.a.
C	*Total manufacturing*	*840*	*1,138*	*238.3*	*447,2 (c)*	*559.1*	*5,784*	*7,955 (c)*	*8,918*
	Other industries								
F	Wholesale and retail trade	106	191	12.5	35.9	n.a.	296	615	n.a.
63	Property and business services	206	449	20.2	81.7	n.a.	499	1,324	n.a.
8461	Research and scientific institutions	31	42	23.0	27.8	n.a.	485	489	n.a.
(*d*)	Other n.e.c.	72	123	63.1	115.3	n.a.	1,086	1,790	n.a.
16, D-I-K-L	*Total other industries*	*415*	*805*	*118.9*	*260.7*	*362.1*	*2,368*	*4,219*	*5,499*
	Total all industries	**1,278**	**1,974**	**379.7**	**737.1**	**921.2**	**8,533**	**12,463**	**14,417**

(*a*) Excludes enterprises in ASIC Division A. (*b*) Broad industry data only available for 1985–86 data. (*c*) Not equal to sum of manufacturing components. (*d*) ASIC Codes 16, D, E, G-H, 61-62, J-L excluding ASIC class 8461.

Payments and receipts for patent licence fees and other technical know-how

Many Australian business enterprises supplement their R&D efforts by either purchasing or licensing foreign or Australian technology. Data for 1981–82 and 1984–85 are presented below.

PAYMENTS AND RECEIPTS FOR TECHNICAL KNOW-HOW BY BUSINESS ENTERPRISES PAYMENTS AND RECEIPTS BY INDUSTRY OF ENTERPRISE ($ million)

Industry of enterprise		*Payments for technical know-how*		*Receipts for technical know-how*	
ASIC code	*Description*	*1981–82*	*1984–85*	*1981–82*	*1984–85*
	Manufacturing—				
21	Food, beverages and tobacco	14.9	16.3	—	1.1
23-24	Textiles, clothing and footwear	1.4	8.9	—	n.p.
25	Wood, wood products and furniture	2.9	0.1	—	n.p.
26	Paper, paper products, printing and publishing		4.1	n.p.	0.2
27	Chemicals, petroleum and coal products	34.3	37.4	3.6	6.6
28	Non-metallic mineral products	5.6	7.8	n.p.	n.p.
29	Basic metal products	7.6	4.7	2.0	6.1.
31	Fabricated metal products	3.3	2.3	0.7	1.1
32	Transport equipment	13.8	17.4	2.0	0.9
334, 335	Photographic, professional and scientific equipment, appliances and electrical equipment	16.9	37.4	1.3	n.p
336	Industrial machinery and equipment	3.2	3.2	0.2	1.4
33	Total other machinery and equipment	20.1	40.6	1.5	4.8
34	Miscellaneous manufacturing	3.3	5.2	0.9	n.p
C	*Total manufacturing*	*107.1*	*144.7*	*11.5*	*23.9*
	Other industries	*28.9*	*17.9*	*5.9*	*12.3*
	Total all industries	**136.0**	**162.6**	**17.4**	**36.2**

Expenditure by Commonwealth Government organisations on science and technology

The Commonwealth Department of Industry, Technology and Commerce conducts the annual Science and Technology Statement Collection which obtains expenditure data on R&D and broader scientific and technological activities. The collection covers Commonwealth Government organisations (including public business enterprises) and includes expenditure on both intramural (inhouse) activity and R&D extramural funding (grants, contacts etc.).

Latest published results show total Commonwealth Government S&T expenditure in 1986–87 to be $74,899m. Of this, total R&D expenditure was $1181.7m ($728.4m intramural, $453.3m extramural).

The table below gives an overview of 1986–87 R&D expenditure by the Commonwealth, classified by socio-economic objective.

TOTAL COMMONWEALTH GOVERNMENT EXPENDITURE(*a*) ON R&D BY SOCIO-ECONOMIC OBJECTIVE, 1986–87

($ million)

(*Source*: Department of Industry, Technology and Commerce)

Socio-economic objective	*R & D expenditure (b)*
National security (defence)	*153.6*
Economic development—	
Agriculture	166.6
Forestry and fisheries	28.4
Mining—	25.8
Manufacturing	136.3
Construction	14.3
Energy	60.3
Transport	6.5
Communications	63.5
Economic services n.e.c.	17.8
Total economic development	*519.6*
Community welfare	
Urban and regional planning	1.5
Environment	22.1
Health	100.2
Education	2.6
Welfare	4.8
Community services n.e.c.	57.6
Total community welfare	*188.9*
Advancement of knowledge—	
Earth, ocean and atomsphere n.e.c.	96.8
General advancement of knowledge	222.9
Total advancement of knowledge	*319.7*
Total	**1181.7**

(*a*) Excludes expenditure by Commonwealth Government organisations funded from recoveries and external sources such as industry and State Government. Also excludes recurrent funding for Higher Education Institutions and the costs to the Commonwealth of tax incentives. (*b*) Sum of intramural plus extramural expenditures.

General government sector

The estimate of expenditure on R&D carried out in Australia by organisations in the general government sector during 1985–86 was $1,044 million at *current* prices. This represents a 9 per cent increase in expenditure compared with 1984–85. At *constant* (average 1979–80) prices, R&D expenditure is estimated to have increased by 3 per cent over the same period.

Higher education sector

The estimate of expenditure on R & D carried out in Australia by higher education organisations (excluding CAEs) during 1985 is $708m at *current* prices. This represents a 6 per cent increase in expenditure compared with 1984. At *constant* (average 1979–80) prices, R & D expenditure is estimated to have decreased by 1 per cent over the same period.

RESEARCH AND EXPERIMENTAL DEVELOPMENT CARRIED OUT BY GENERAL GOVERNMENT ORGANISATIONS
R&D EXPENDITURE AND HUMAN RESOURCES BY SOCIO-ECONOMIC OBJECTIVE

Socio-economic objective	*R & D expenditure ($m)* 1981–82	1984–85	*Person years of effort on R & D* 1981–82	1984–85
National security (defence)	*113.2*	*151.0*	*3,625*	*3,232*
Economic development—				
Agriculture	236.0	323.3	5,681	5,925
Forestry and fisheries	44.2	48.4	1,140	941
Mining (prospecting)—				
energy sources	12.0	11.5	244	173
other	9.1	22.4	236	321
Mining (extraction)—				
energy sources	5.0	7.9	124	120
other	8.7	8.4	228	138
Manufacturing	73.6	103.3	1,658	1,718
Construction	7.1	13.3	207	265
Energy	42.7	51.8	731	644
Transport	6.2	22.2	134	303
Communications	0.6	0.3	26	6
Economic services n.e.c.	22.6	18.1	558	335
Total economic development	*467.8*	*630.8*	*10,966*	*10,886*
Community welfare—				
Urban and regional planning	2.8	0.4	81	12
Environment	43.6	28.8	1,034	559
Health	24.8	43.0	890	1,072
Education	2.7	2.7	99	81
Welfare	1.7	3.7	64	88
Community services n.e.c.	3.6	9.2	85	196
Total community welfare	*79.2*	*87.8*	*2,253*	*2,008*
Advancement of knowledge—				
Earth, ocean and atmosphere n.e.c.	34.3	75.2	542	882
General advancement of knowledge	20.1	14.0	408	210
Total advancement of knowledge	*54.4*	*89.2*	*950*	*1,092*
Total	**714.6**	**958.8**	**17,795**	**17,218**

RESEARCH AND EXPERIMENTAL DEVELOPMENT CARRIED OUT BY HIGHER EDUCATION ORGANISATIONS
R & D EXPENDITURE AND HUMAN RESOURCES BY SOCIO-ECONOMIC OBJECTIVE

Socio-economic objective	*R & D expenditure ($m)* 1981	1984	*Person years of effort on R & D* 1981	1984
National security (defence)	*0.7*	*1.2*	*19*	*29*
Economic development—				
Agriculture	35.5	58.7	1,554	1,922
Forestry and fisheries	4.3	7.9	167	282
Mining (prospecting)—				
energy sources	1.8	1.8	64	71
other	1.8	3.3	67	108
Mining (extraction)—				
energy sources	1.0	1.0	44	34
other	2.4	3.6	104	128
Manufacturing	13.0	18.1	583	622
Construction	2.7	7.0	107	224
Energy	21.7	24.7	764	769
Transport	2.6	3.7	98	129
Communications	3.2	5.8	143	196
Economic services n.e.c.	21.0	17.9	677	429
Total economic development	*110.9*	*153.5*	*4,372*	*4,915*

RESEARCH AND EXPERIMENTAL DEVELOPMENT CARRIED OUT BY HIGHER EDUCATION ORGANISATIONS
R & D EXPENDITURE AND HUMAN RESOURCES BY SOCIO-ECONOMIC OBJECTIVE—*continued*

Socio-economic objective	*R & D expenditure ($m)*		*Person years of effort on R & D*	
	1981	*1984*	*1981*	*1984*
Community welfare—				
Urban and regional planning	4.0	4.2	161	116
Environment	5.7	13.4	256	441
Health	87.3	136.3	3,345	4,147
Education	18.1	26.3	923	894
Welfare	5.7	8.3	202	245
Community services n.e.c.	11.3	13.1	427	336
Total community welfare	*132.1*	*201.6*	*5,314*	*6,178*
Advancement of knowledge—				
Earth, ocean and atmosphere n.e.c.	26.3	41.4	1,019	1,127
General advancement of knowledge	182.4	269.8	7,516	8,332
Total advancement of knowledge	*208.7*	*311.2*	*8,535*	*9,459*
Total	**452.5**	**667.5**	**18,241**	**20,580**
Universities contribution	443.5	644.4	17,699	19,533
CAEs' contribution	9.0	23.1	542	1,047

RESEARCH AND EXPERIMENTAL DEVELOPMENT CARRIED OUT BY PRIVATE NON-PROFIT ORGANISATIONS
R&D EXPENDITURE AND HUMAN RESOURCES BY SOCIO-ECONOMIC OBJECTIVE

Field of science	*R&D expenditure ($'000)*		*Person years of effort on R&D*	
	1981–82	*1984–85*	*1981–82*	*1984–85*
National security (defence)	—	—	—	—
Economic development				
Agriculture	36	55	3	2
Forestry and fisheries	—	—	—	—
Mining (prospecting)—				
energy sources	—	—	—	—
other	—	158	—	1
Mining (extraction)—				
energy sources	—	—	—	—
other	—	—	—	—
Manufacturing	—	—	—	—
Construction	—	159	—	2
Energy	3	535	1	8
Transport	196	427	12	8
Communications	—	3	—	1
Economic services n.e.c.	512	780	18	18
Total economic development	*747*	*2,116*	*34*	*40*
Community welfare				
Urban and regional planning	—	397	—	6
Environment	—	4	—	—
Health	17,758	39,446	563	643
Education	1,739	1,228	63	24
Welfare	420	558	22	16
Community services n.e.c.	35	88	1	2
Total community welfare	*19,952*	*41,720*	*649*	*691*
Advancement of knowledge—				
Earth, ocean and atomsphere n.e.c.	—	45	—	1
General advancement of knowledge	210	251	6	8
Total advancement of knowledge	*210*	*296*	*6*	*9*
Total	**20,909**	**44,133**	**688**	**740**

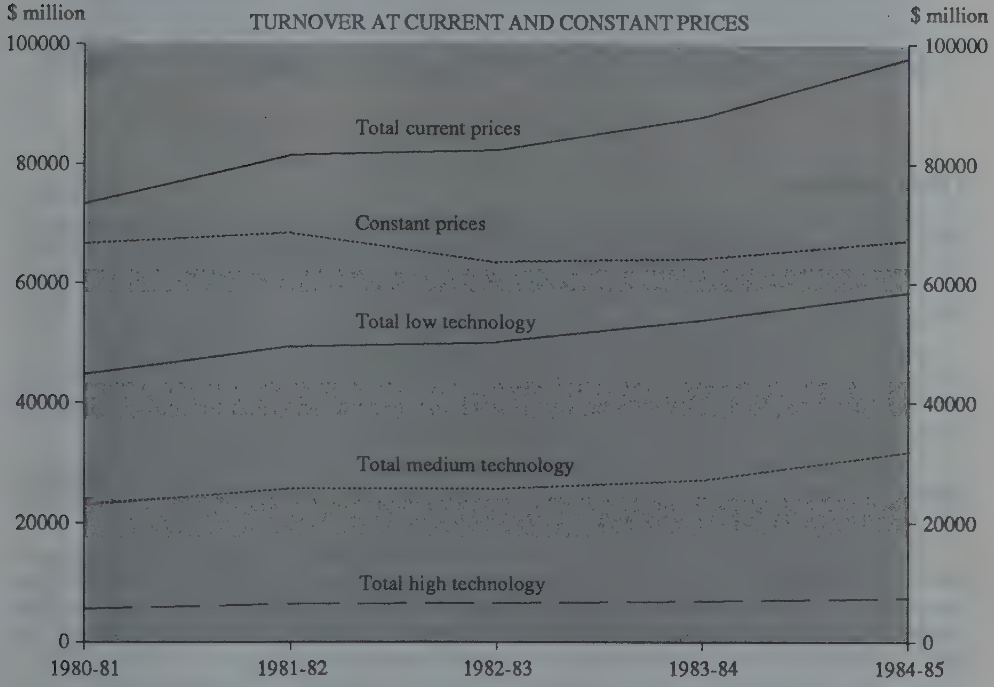
Statistics on manufacturing industry technology

The level of technological development in manufacturing industry can be viewed by classifying industries to high, medium and low technology according to the intensity of their R&D effort. Using the OECD classification by this method, high technology industries are defined as those manufacturing establishments classified to aircraft (Australian Standard Industrial Classification [ASIC] Class 3244). Communications and other electronic equipment (ASIC Classes 3351 and 3352); electrical appliances and machinery (ASIC Classes 3353–3357); pharmaceutical and veterinary products (ASIC Class 2763); and photographic, professional and scientific equipment (ASIC Group 334). Medium technology covers chemicals (apart from ASIC Class 2763); petroleum and coal products; non-ferrous metals and basic products; motor vehicles and parts, railway equipment and other transport equipment (ASIC Class 3245); industrial machinery; rubber and plastic products; and, other manufacturing (ASIC Group 348). Low technology covers food, beverages and tobacco; textiles, clothing and footwear; wood and wood products; paper and paper products, etc.; petroleum refining; non-metallic mineral products, basic iron and steel products; fabricated metal products; ships and boats; and, leather products.

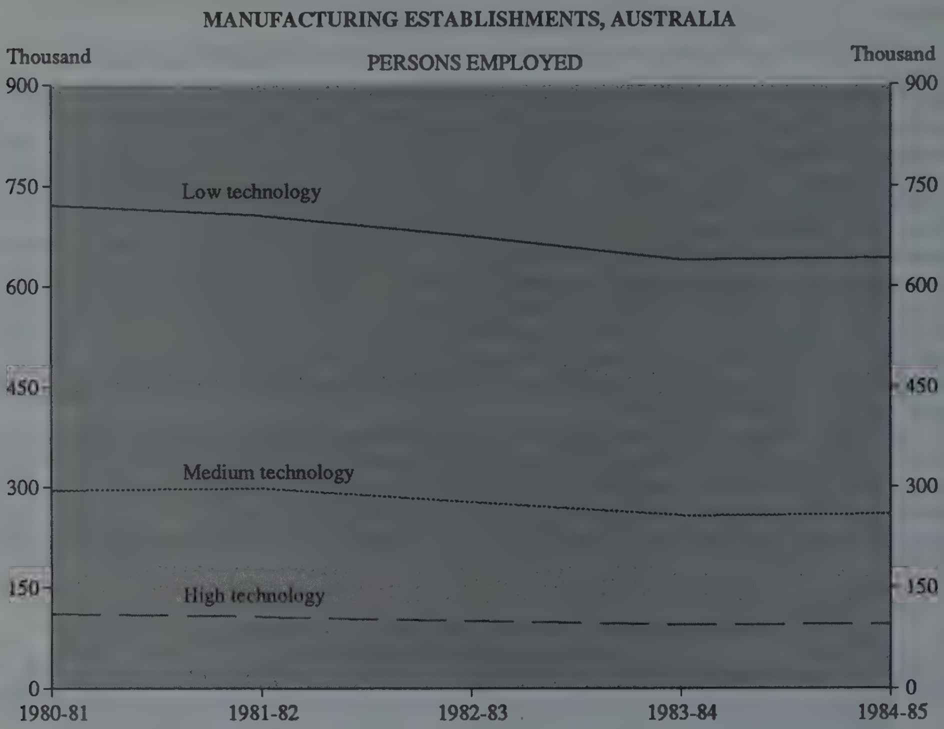
The figure below shows that high technology industries as a group showed only modest current price growth in turnover in the four year period from 1980–81 to 1984–85 (31 per cent). Low and medium technology groups have performed comparably with four year growths of 31 per cent and 38 per cent respectively. In constant prices terms, total manufacturing industry turnover has shown little growth (1 per cent over the four year period).

MANUFACTURING ESTABLISHMENTS, AUSTRALIA

TURNOVER AT CURRENT AND CONSTANT PRICES



The following figure shows a downturn in manufacturing industry employment levels (net drops over the four years of 13 per cent, 12 per cent and 11 per cent for high, medium and low technology industries respectively). Data for the latest year available (1984–85) show modest rises over 1983–84 (1.0 per cent, 1.2 per cent and 0.4 per cent for high, medium and low technology industries respectively).



Trade statistics

Another way of viewing Australian manufacturing industry's level of technological development is to look at trade of high technology products. Products are classified initially according to commodity (Australian Import and Export Commodity Codes) but converted to an ASIC basis. Definitions of high, medium and low technology groups according to ASIC are the same as above.

The current price value of exports of Australian manufactures is increasing for all groups but most of all for low technology products (17 per cent increase between 1984–85 and 1985–86 compared to 9 per cent and 10 per cent for medium and high technology products respectively), as shown in the figure below.

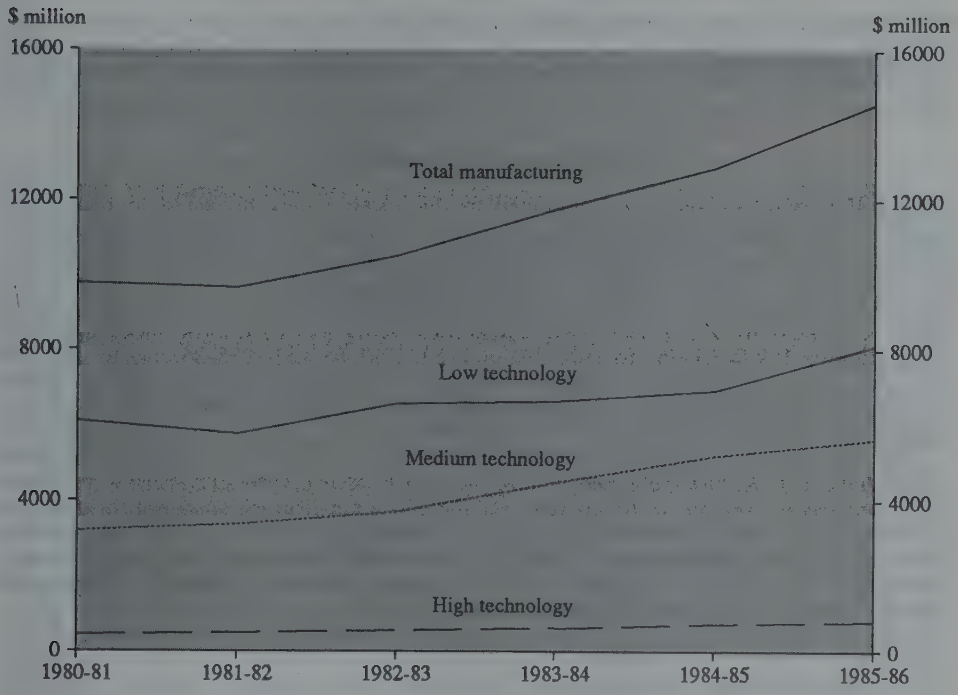
Current price export growth over the four year period 1980–81 to 1984–85 is, in contrast, highest for the high technology group (65 per cent compared with 62 per cent for medium and 13 per cent for low technology).

The figure below shows that the current price value of total imports of manufactured goods has increased more than exports over the period 1984–85 to 1985–86 (20 per cent compared to a 13 per cent increase for the total current price value of exports). The highest increase was for high technology products (27 per cent compared with 24 per cent and 10 per cent for medium and low technology products respectively).

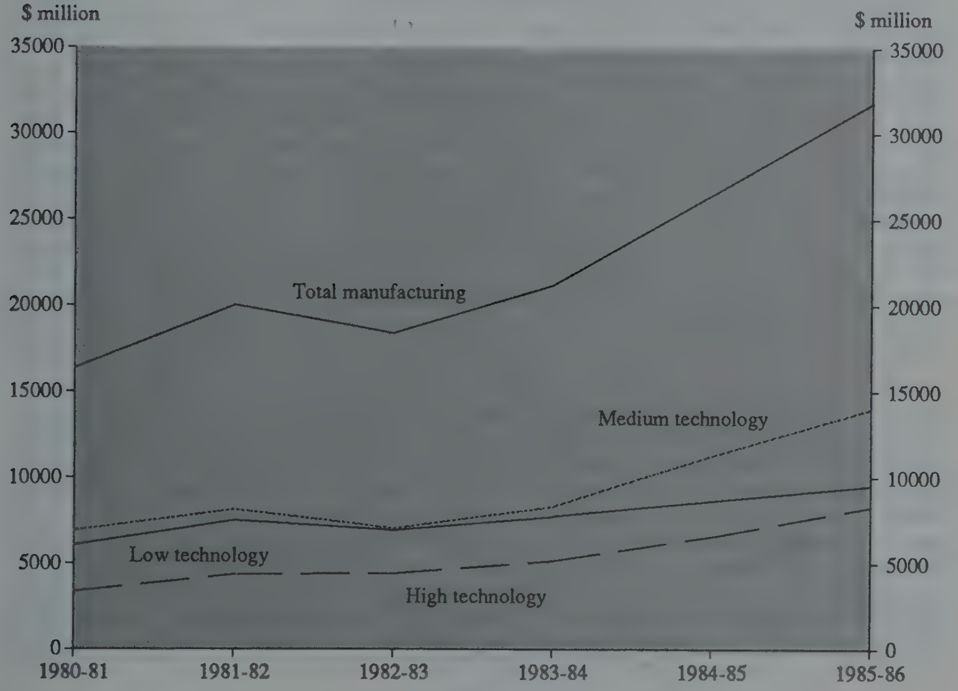
Over the four year period 1980–81 to 1984–85 the value of imports of high technology goods has increased the most (95 per cent compared to 62 per cent and 42 per cent for medium and low technology goods respectively).

The sudden devaluation of the Australian dollar in 1983 will have contributed to some extent to the rise in the value of imports. To a lesser extent perhaps, it can be expected that the value of exports will continue to rise in the future due to the relatively low value of the Australian dollar.

EXPORTS OF MANUFACTURES, AUSTRALIA



IMPORTS OF MANUFACTURES, AUSTRALIA



Other activities

For information on other activities related to science and technology, *see Year Book* No. 70. That edition contains information on scientific and technological information services (page 640), social science and humanities research (page 652) and international activities (page 653).

Additional information

Additional information on topics presented in this chapter may be found in the annual reports of the organisations mentioned, particularly the Department of Industry, Technology and Commerce, the CSIRO, the Australian Nuclear Science and Technology Organisation, the Department of Defence, and in the annual *Science and Technology Statements*. Statistical information on R&D for the years 1968–69, 1973–74 and 1976–77 may be found in the reports published by the (then) Department of Science on Project SCORE. Statistical information on R&D relating to 1978–79, 1981–82, 1984–85 and 1985–86 may be obtained from the Australian Bureau of Statistics (ABS). Further statistical information on higher education is obtainable from the Commonwealth Tertiary Education Commission. Trade and industry operations data are available from the ABS.

The Department of Industry, Technology and Commerce *Australian Science and Technology Indicators Report*, published in 1988, gives a good overview and analysis of science and technology information in Australia by the use of S&T indicators. It presents information on R&D effort and expenditure, science and technology workforce, S&T information resources, scientific equipment and facilities, literature-based S&T measures, patent activity, technology training, financial support for technological development, industry operations and trade by level of technology, and transfer of technical knowledge.

SCIENCE AND TECHNOLOGY IN AUSTRALIA

(This special article has been contributed by the Commonwealth Scientific and Industrial Research Organisation—written by Graeme O'Neill)

Several lines of evidence indicate that by 60,000 years ago, a coastal culture from the Indonesian archipelago developed a sailing craft capable of undertaking short ocean voyages. From this culture came the ancestors of Australia's Aboriginals. Uniquely, the colonisation of Australia demanded the use of maritime technology—the world's other inhabited continents were all colonised via overland routes. No direct overland connection has ever existed between Australia and the Indonesian archipelago; the smallest gap even at times of low sea level was at least 70 kilometres. Thus, the presence of humans in Australia some 50-60,000 years ago can only be explained by their use of boats or rafts.

In time, these early marine technologists made a successful transition to a hunter-gatherer existence, and developed a unique hunting weapon, the boomerang, with aerodynamic principles that anticipated the curved aerofoil wing that millenia later would permit man himself to take to the air. Aboriginal technologists also developed the woomera, a mechanical throwing device based on the lever, which enabled a spear to be thrown with much greater force and accuracy than by the human arm alone. They also developed tools for making fire at will, and employed fire to modify the environments in which they hunted, and as an aid to hunting itself. And although Aboriginal cultures never studied their environments in a scientific sense, they understood the world around them with an intimacy that has not yet been achieved by formal scientific study.

Australia's geographic isolation and harsh environment demand innovation; the technological achievements of the continent's original colonisers were an impressive response to adversity. It cannot be claimed that innovation began with the arrival of the continent's first European colonists 200 years ago; the scientific and technological achievements of Australians during those two centuries must be seen as part of a 60,000-year continuum of human progress, impelled by isolation and environmental adversity.

Indeed, the efforts of Australia's first British colonists to transplant agricultural systems evolved for temperate Europe's climate and fertile soil proved a failure in the warmer, drier climate and poor soils of the Hawkesbury region. English winter wheats were poorly adapted to such conditions and susceptible to disease, and yields were poor. The wheat industry, which today dominates Australian agriculture, limped on throughout the greater part of the 19th century. It took an historic confluence between a scientific revolution and a scientific genius in the 1880s to establish it as a major force in the Australian economy. Amid scepticism from his peers and the community, William Farrer, former Oxford mathematics wrangler, showed that systematic breeding principles could be applied to improving and adapting wheat to Australian conditions. Farrer bred rust-resistant varieties, but his more important achievement was to develop earlier-maturing varieties like 'Federation' which, by avoiding the worst heat of summer, enabled the wheat industry to expand out of the cooler, wetter highlands into the broad, drier plains of the inland. By the second decade of the 20th century, the wheat industry was booming. Although the genetic legacy of Farrer's wheats has been diluted, the systematic, scientific approach to breeding, which he was among the first in the world to exploit, remains his monument. It set a pattern for wheat breeding that is still used in Australia's wheat breeding institutions today.

Australia's other great agricultural industry, wool-growing, had its genesis soon after the founding of the colony. Captain John Macarthur, the Reverend Samuel Marsden, William Cox and Alexander Riley imported a number of Spanish Merino sheep. Macarthur and Marsden were probably the most prominent figures in developing an improved merino strain yielding an exceptionally fine, high-quality wool. The wool industry boomed. By the early 1890s, sheep numbers had reached a peak of 100 million but then went into sharp decline, particularly in drier regions, due to the impact of overgrazing on native pastures, drought and competition from introduced rabbits. Australian scientists have continued to grapple with these problems during the 20th century with mixed success.

Innovation in Australia during the 19th century was largely the domain of the individual; given the central importance of agriculture, grazing and minerals—chiefly gold—to the colony's economy, it was in these areas that Australians displayed their greatest inventiveness.

Some inventions were bizarre, others highly practical. The stump-jump plough, invented by Robert and Clarence Smith in 1876, enabled cultivation of mallee lands that had previously proved untillable because of the huge sub-surface mallee roots left after surface growth had been removed.

In 1877, Frederick Wolseley patented on the world's first mechanical shearing equipment, whose basic design still edures in modern shearing sheds. Another durable invention was James Alston's unique Australian windmill, used to pump artesian water for livestock in arid areas.

In 1884, 19 year old Hugh McKay demonstrated a prototype of his wheat stripper-harvester, which became the first commercially successful machine capable of stripping, threshing, cleaning and bagging wheat in one continuous operation. By 1902 McKay was exporting harvesters, mainly to Argentina.

In the 1890s, Christian Koerstz developed a cheap wool press which could be operated by two men, allowing even small graziers to build their own wool sheds, where previously they had taken their sheep to large landholders for shearing.

The same year saw Australian veterinary scientists develop a vaccine against anthrax after a successful visit by one of Louis Pasteur's staff—an early example of the extensive international exchanges that have so benefited 20th century Australian science and technology.

Australian research during the 19th century was focused on the natural sciences. The richness of Australia's unique flora and fauna was hinted at by the first formal collections of plants, animals and insects by Joseph Banks and Daniel Solander, naturalists with Captain James Cook's *Endeavour* expedition to the east coast in 1770. This was confirmed by a succession of explorer-naturalists and botanists, chiefly of British origin. Robert Brown, naturalist on Mathew Flinders *Investigator*, during its Admirality expedition to Australia in 1801, collected more than 3,000 plant specimens. The first part of his *Prodromus Florae Novae Hollandiae et Insulae Van-Dieman*, published in 1801, revolutionised botanical classification, and its insights into the anatomy, physiology and function of Australia's plants stimulated interest in the new science of geography. John Gould studied and painted many of Australia's birds and animals in 1838–40 and Joseph Hooker investigated the flora of Tasmania and in his *Flora Tasmania*, published in 1859, discussed its biogeography in terms of the new theory of natural selection propounded by Charles Darwin. Darwin himself had visited Australia in 1836 as the *Beagle* made its way home from its voyage to South America and the Galapagos Isles.

German-born botanist Baron Ferdinand von Mueller, who was appointed Victorian Government botanist in 1853, travelled throughout south-eastern Australia developing a formidable collection and knowledge of Australia's flora. He published 800 papers and many books and was left embittered when the task of writing the first *Flora Australiensis* went to eminent British botanist George Bentham. Bentham drew heavily on von Mueller's data, but never visited Australia himself.

Astronomy, the science which was ultimately responsible for Australia's colonisation (the *Endeavour* had journeyed to Tahiti to allow scientific observations of the transit of Venus across the face of the sun in 1796), was also a significant research activity in Australia. Southerly latitudes and clear skies offered a much richer vista of the universe. Sir Thomas Brisbane, Governor of New South Wales in 1821 and who in the same year became president of the Philosophical Society (forerunner of the Royal Society of New South Wales), was a keen amateur astronomer. He brought with him the best available astronomical instruments and two expert astronomers, Carl Rumker and James Dunlop. Brisbane built a small observatory at Government House in Parramatta which rapidly gained an international reputation. Among its achievements was the first observation of Encke's comet in 1822.

John Tebbutt's astronomical observations from 1854 onwards led to the discovery of several more comets, as well as several double stars and variable stars, and several new satellites of Jupiter. From such beginnings, Australia developed a reputation in international astronomy which has been continued in modern times by the achievements of its optical and radio astronomers.

One of Australia's most brilliant scientists, but one who received little recognition in his time, was British-born Lawrence Hargrave, inventor of the box kite, who developed a theory of aeronautics based upon his experiments with kites and model aircraft. He discovered that wings with curved surfaces gave twice the lift of flat wings, and that a tail plane gave added stability to his model aeroplanes. Both principles were of fundamental importance to the development of flight. Hargrave also developed a workable radial rotary airscrew engine which formed the basis for the first engines used in European aircraft in the 20th century.

Henry Sutton, a music shop proprietor, designed a continuous current dynamo as early as 1870, constructed as many as 20 different types of telephone at the same time that Alexander Graham Bell was achieving recognition for his invention of the telephone in America. During the 1870s, Sutton carried out experiments with heavier-than-air materials for flight.

Australia's first university, the University of Sydney, had been founded in 1850, but did not establish a separate science faculty until 1879. Melbourne University was founded in 1853, Adelaide University in 1874, and the University of Tasmania in 1889.

By the late 19th century, Australian science had developed considerable momentum. Royal Societies or Philosophical Societies existed in all the eastern States by 1884, and university researchers were making important contributions to international science and technology, principally in the area of fundamental studies. Horace Lamb, who became the first Professor of Mathematics at Adelaide University a year after it was established in 1874, was later elected a Fellow of the Royal Society for outstanding research into the motion and properties of fluids. Melbourne University chemist, Professor David Masson, was also elected to the Royal Society for his fundamental work on the constitution of atoms and his theory of the dissociation of electrolytes in water.

The steady expansion of agriculture in Australia confronted the industry with a range of environmental and agronomic problems. Additionally, crops and animals that had been selected for northern hemisphere conditions performed relatively poorly in Australia. The need for scientific study of agriculture was realised, and in 1885, Roseworthy Agricultural College was founded in South Australia to teach the principles of agriculture and to investigate its problems. Victoria's Dookie Agricultural College was founded a year later. N.S.W's Hawkesbury Agricultural College was founded in 1891; that same year a horticultural college was founded in Victoria.

Australia's geology was very different from that of other countries; there was lively debate over the age of the continent, and the discovery of major mineral deposits during the 1800s provided economic incentive for geological research and exploration. The State governments sponsored geological and mineralogical surveys which, in addition to discovering mineral deposits, also yielded geological, mineralogical and topographical maps upon which renewed mineral exploration in the 20th century was based.

Australia's minerals industry traces its beginnings to the 1797 discovery of coal on the banks of the Hunter River, as well as at Coalcliff 65 km south of Sydney. The mining technology of the day was inadequate to extract the coal; Australia's distinctive geology has continued to pose special problems for mining operations, and throughout the 1800s required the development of innovative mining techniques for important minerals. By the late 1800s, gold, tin, copper, silver, lead and zinc orebodies were being mined, often at considerable depth, where hazards to miners were great. Australia was the world's largest producer of gold, and at Bendigo, novel deep-drilling techniques had been developed which permitted recovery of ore from considerable depths, at a time when most gold mines were still extracting gold from basically alluvial sources. Research for safer and more efficient mining techniques continues today.

Mineral extraction techniques evolved; the bromo-cyanide process for gold extraction was first demonstrated at Kalgoorlie to recover gold from telluride ores in 1899 and the world's most important mineral extraction and separation technique, the flotation process, was first developed on a commercial scale in Australia by Charles Potter, a Melbourne brewer and chemist. Potter's process, patented in 1901, employed a late 18th century discovery that powdered mineral ores particles could be brought to the surface and suspended by attaching to bubbles passed through ore-charged liquids. First used at Broken Hill in 1901, Potter's flotation process initially yielded a collective aggregate of silver, lead and zinc, but later developments, some of them arising from fundamental studies, saw the flotation process progressively refined to the point where lead, zinc and many other commercially important minerals could be floated out selectively.

Science and technology in 20th century Australia

With Federation in 1901, and with the Australian economy evolving rapidly in diversity and complexity, the administration and funding of science in Australia took on a more systematic pattern, chiefly because of the increasing involvement of the new Commonwealth Government. In time, it would become the major sponsor of Australian science and technology, giving it the cohesion and direction that had been absent in the previous century. Australia's traditional reliance upon agricultural and mineral exports saw both government and private industry research focused in these areas, a pattern which was to predominate until recent times.

Australia's fifth university, the University of Queensland, was the first university established in the 20th century, in 1910; Western Australia became the last State to establish a university, the University of Western Australia, in 1913. By the 1980s, Australia had 19 universities—Sydney and Melbourne each have three, Brisbane, Adelaide and Perth each have two, Hobart has one and there are universities in the Australian capital, Canberra, and the major provincial centres of Geelong, Armidale, Townsville, Newcastle and Wollongong.

Australia's universities have made important contributions to international science and technology. In 1907, Professor O. U. Vonwiller of Sydney University showed that amorphous selenium would conduct electricity induced by light, anticipating the development of the modern photocopier. In 1928, E. J. Hartung of Melbourne University showed that the photographic paper darkened when exposed to light because silver chloride decomposed, giving off chlorine and precipitating silver.

In the first half of the 20th century, universities concentrated on their educational role. Their links with industry were oriented mainly towards agriculture and mining, and interaction with manufacturing industry was at a low level.

In 1926, the Commonwealth established the Council for Scientific and Industrial Research (CSIR), progenitor of the Commonwealth Scientific and Industrial Research Organisation. CSIR's early work focused on research for agriculture which, as the economic impetus of great gold rushes of the latter half of the 19th century ebbed, had become the mainstay of the economy. Agriculture was centred on wheat and grazing; wool had been established as a major export the previous century, and after a faltering start, the wheat industry was prospering from the legacy of breeders such as Farrer.

CSIR's early work was constrained by limited resources but gradually it built up individual research programs, and then specialised research divisions, studying animal health and nutrition, soils, economically-significant plants, fisheries, food preservation and transport. Not until 1936 did the Australian Government decide to extend CSIR's activities into secondary industry. It proved a timely decision, providing a springboard for the development of industries that strengthened Australia's effort during World War II.

During the War three new divisions were formed, dealing with dairy research, radiophysics, and lubricants and bearings—the latter became the Division of Tribophysics (surface physics). Some of CSIRO's most significant achievements, even to the modern day, trace back to the wartime establishment of these divisions.

One of the most important developments in CSIR was the establishment of a National Standards Laboratory in 1939 to administer and refine standards of measurement, as well as to calibrate the measurement tools of Australian industry. It underpinned the contribution of manufacturing industry to the war effort.

In the same year, CSIR began a top-secret radar project in a laboratory at Sydney University, which later allowed the deployment of a transportable radar system in the Pacific war theatre.

In 1947, man-made rain fell for the first time in Australia, and probably in the world, when a CSIR aircraft seeded clouds over the Blue Mountains with silver iodide. Research into rainmaking was finally discontinued in 1981 after it was concluded that no useful increase in rain could be produced by cloud seeding, a finding which itself produced controversy.

In the years immediately after the War, a debate arose over potential conflict between CSIR's need for scientific freedom, and the preservation of national security. The Science and Industry Research Act of 1949, which formally established the Commonwealth Scientific and Industrial Research Organisation (CSIRO), resolved the issue by specifically precluding its involvement in secret or classified research of a military nature.

CSIRO's management was now conducted by a small Executive, instead of the council that had guided CSIR. The Executive's first chairman was Ian Clunies Ross (later Sir Ian), whose vision of the potential contribution of scientific research to Australia's development, alloyed with his exceptional skills as an advocate and lobbyist for science, was primarily responsible for a remarkable decade of expansion and diversification of the Organisation from 1949 to 1959.

In 1945, CSIR had established a Division of Radiophysics to study the sun. By the 1950s, CSIRO led the world in radioastronomy, and in 1961 began studies of the radio universe with one of the world's largest radiotelescopes at Parkes, New South Wales. The instrument, which in enhanced form is still in use today, has yielded important discoveries about the evolution of the universe. Among other things, it has located half of the known pulsars—rapidly rotating remnants of stars destroyed by supernovas—and has identified complex organic molecules in space which could have been building blocks for life. From the mid-1960s, it served as a powerful primary receiver for transmissions from US spacecraft, relaying Mans' first words from the moon, and playing major roles in the dramatic rescue of the astronauts aboard the ill-fated Apollo 13 mission and the tracking of the Giotto space probe to Halley's Comet in 1986. CSIRO's new Australia Telescope, an array of radio antennae incorporating the Parkes radiotelescope, is due to be completed during 1988. It will have equivalent power to a radiotelescope 300 km in diameter, and will be capable of mapping the furthest reaches of the universe.

The Division of Radiophysics has made two outstanding contributions to air navigation technology; firstly with the development of the Distance Measuring Equipment system, based on triangulation with radio beacons, and secondly, with Interscan, a microwave-based landing system that allows aircraft to locate their position in three-dimensional space with great precision under all weather conditions. Interscan allows a choice of widely-varying landing approaches to be chosen, helping to minimise noise pollution and greatly increasing the flexibility and safety of air traffic control. In 1978 the International Civil Aviation Organisation selected Interscan as the international standard for aviation landing systems to serve into the 21st century.

The three decades after World War II saw CSIRO establish a reputation for excellence in research in many fields. A huge rabbit plague had developed during the war years, and was having a disastrous effect on the productivity of grazing land. CSIRO imported a virus for the rabbit disease myxomatosis, which after initial failure, took hold in Victoria in 1950 and killed millions of rabbits.

In 1952 CSIRO scientist Alan Walsh developed the atomic absorption spectrometer, a device capable of rapdily analysing the chemical constituents of materials as diverse as mineral samples, human blood or polluted water. Described as the greatest advance in chemical analysis this century, the atomic absorption spectrometer has saved mineral exploration companies millions of dollars by performing in minutes complex chemical analyses that had once taken many days.

So extensive and diverse are CSIRO's research activities that any account of its achievements is necessarily eclectic. Other significant advances in the post-war decades include:

- Partially-stabilized zirconia (PSZ), described as the world's toughest ceramic.;
- A new generation of safe, potent insecticides called insecticidal esters, based upon fundamental studies of the interaction of chemical molecules with insect nerve membranes. Insecticidal esters will not persist in the environment and have very low toxicity to other animals;
- Biological control of skeleton weed during the 1960s, and sirex wood wasp in pine plantations in the 1970s. More recently, a highly successful biological control program against the world's worst water weed, the floating fern *Salvinia,* in Australia, Papua-New Guinea and several Asian and African nations. *Salvinia* is expected to be reduced to an insignificant economic problem around the world by the 1990s;
- SIROTEM, a new electromagnetic device which allows hidden sub-surface orebodies to be detected at depths up to 300 m;
- Advanced satellite image-analysis techniques, which have revolutionised strategic exploration for minerals, allowed large-scale mapping of Australia's environments, and permitted monitoring of the development of crops;
- A computerised system for managing cotton and its pests, based on an understanding of how the crop develops and of the life cycles of pests and their natural predators;
- Several advanced methods of purifying water, based on ion-exchange resins or tiny magnetic beads which selectively remove salts and other impurities;
- Genetically engineered animals. CSIRO produced Australia's first genetically-engineered sheep in 1986. The technique ultimately promises sheep which will grow faster and larger under the influence of an extra growth hormone gene in their cells;
- A vaccine which promotes twin births in sheep, accelerating productivity for the fat lamb industry;

- Genetic engineering of plants. CSIRO produced Australia's first genetically engineered plant in 1985, and is now working to produce genetically engineered cereals;
- A technology for custom-designing computer chips containing more than 100,000 transistors. The technology allows research institutions and industry to design chips for specialised applications in scientific devices or high-technology manufactured goods;

Other Commonwealth instrumentalities, universities and other education institutions, medical research centres, State research bodies and, to a lesser extent, private industry, have provided the warp to CSIRO's weft in the fabric of Australian science and technology. Some of their achievements in recent decades include:

- Development of a new high-efficiency solar cell by the University of NSW, employing a simpler metal-insulator semiconductor system;
- Melbourne University's 'bionic ear', an implant for the totally deaf, which analyses sound and encodes it for detection by the brain;
- A new process for producing ethanol by fermentation, using the bacterium *Zymomonas mobilis,* instead of yeast, developed by the University of NSW;
- The identification and isolation by the Australian Institute of Marine Science of a natural agent that protects corals from damaging ultra-violet radiation. The compound has potential uses in commercial sunscreens, and in weathering-resistant paints and plastics;
- Commercial development and release by a private company, Biotechnology Australia, in 1986 of Australia's first genetically-engineered vaccine for use against lethal diarrhoea in piglets;
- Development by Comalco of a highly durable lightweight aluminium alloy, called 3HA, suitable for use without steel liners in alloy engine blocks, as well as in diverse applications involving high strength aluminium castings;
- A new type of automotive engine, employing an orbital motion, developed by the Perth-based private inventor, entrepreneur and engineer, Ralph Sarich, and developed by his company. The new engine has considerably fewer moving parts than any existing automotive engine, and delivers equivalent power from a much smaller size. Sarich has also devloped a revolutionary new fuel injection system; both inventions are approaching commercial release;
- The Jindalee over-the-horizon radar system, developed by the Defence Science and Technology Organisation, which bounces transmission off the ionosphere, allowing targets hundreds of kilometres off Australia's north-west coast to be detected;
- Synroc, a synthetic composite mineral for the safe, long-term immobilisation and storage of radioactive wastes, developed by the Australian National University;

Medical science in the 20th century

At the time of Federation, the States ceded many functions to the Commonwealth, but preserved their responsibility for the health of their communities. As a result, many of Australia's medical research institutions are administered by their respective States, or in conjunction with the Commonwealth. However, most derive a significant part of their research funding from the Commonwealth, principally from the National Health and Medical Research Council, or from various private foundations such as the National Heart Foundation and the various State Anti-Cancer Councils. Under this system, medical research has flourished and Australia enjoys an international reputation for excellence in many fields. Some of the important achievements of Australian medical research include:

- Australian researcher Priscilla Kincaid Smith was one of the first to recognise the link between indiscriminate use of analgesics and a high incidence of kidney damage;
- Although the first birth resulting from in-vitro fertilisation occurred in England, Australia has become pre-eminent in the treatment of human infertility and has a higher success rate than any other country in the world, due largely to the pioneering work of Professor Carl Wood and his associates at Monash University;
- Researchers from Melbourne University and the Royal Children's Hospital in the early 1970s established that rotaviruses were the most important single agent responsible for infantile diarrhoea in both developed and developing nations. Research is in progress to develop a genetically engineered vaccine;
- In collaboration with the Australian National University, CSIRO has determined the structure of one of the key proteins of the influenza virus, and is working with ANU to develop a drug to treat influenza, as well as a synthetic vaccine;

- The Walter and Eliza Hall Institute's recent development of a prototype vaccine against malaria, from basic studies of the antigenic components of the protein coat of the malaria parasite. An estimated 300 million people around the world suffer from malaria, and an effective vaccine would represent one of the most important developments of 20th century medical science;
- Adelaide University's development, via genetic engineering, of a prototype oral vaccine against cholera and typhoid, two other major diseases in developing nations;
- A synthetic human growth hormone, developed by Sydney's Garvan Institute of Medical Research, the University of N.S.W. School of Biotechnology, and California Biotechnology, which could provide a safe treatment for hereditary dwarfism.

The future of Australian science and technology

The future of Australian science and technology appears bright. The nation has no shortage of original thinkers, as attested to by the volume of Australian research papers contributed to the international scientific literature, particularly in areas of fundamental knowledge. That very strength, however, hints at a chronic problem—the low rate at which original ideas are translated into practical applications, or into marketable products or processes that can be marketed within Australia and overseas.

The underlying reasons are historic; most Australian companies were small by overseas standards and could not sustain their own in-house research programs. In the post-War years, Commonwealth Governments actively encouraged multi-national companies to establish subsidiaries in Australia, as a means of diversifying the economy and providing employment, but a penalty in this approach was that such companies were able to rely upon imported technology and ideas from their overseas parents. Some even absorbed progressive local companies, with adverse effect on the level of private research and development.

In the past three decades, the level of privately sponsored research and development declined to one of the lowest levels of any Western nation. There has been little economic pressure to innovate or to maintain technological parity with overseas manufacturers. As a consequence, privately sponsored research stagnated and declined. Until quite recently, Australia's need for foreign exchange has been satisfied by international markets for wheat, wool and minerals, and manufacturing industry fell behind its counterparts in Europe and the United States—not only in its level of involvement in export markets, but in the production technologies it was employing, so that its efficiency declined as well. By the late 1970s, with international export markets for agricultural produce and raw materials declining, and dominated increasingly by manufactured, high-technology goods, the imbalance in Australia's economy was increasingly apparent, and the need to restructure and reorient science and technology towards the task of improving manufacturing industry's performance had become imperative.

Historians may argue that Australia failed to heed the first major warning of the vulnerability of its economy to changes in the marketplace. In the 1950s a new generation of synthetic fibres began to erode markets that had traditionally been dominated by wool. In an intensive research effort from that time onwards, CSIRO studied the biological, biochemical and physical properties of wool and produced innovations in wool processing and wool treatment, such as permanent-pleat wool garments, shrinkproof wool fabrics, and Self-twist spinning—a faster and more economical spinning technique which revolutionised wool spinning around the world. CSIRO also developed cheaper methods of processing wool and evolved a marketing system based on objective measurement of wool's properties, which had traditionally been assessed by eye and hand. This intensive and comprehensive research and development program maintained wool's reputation as the premier fashion fibre in world markets, where the industry might easily have foundered in the 1960s, with disastrous effect upon the Australian economy.

In the past few years Australian research institutions have begun to pay increasing attention to the commercialisation of their research. CSIRO, a number of universities, and private medical research centres have individually or jointly established their own commercial companies. Medicine, veterinary science and agriculture, the historical strengths in Australian research, seem destined to play an important role in Australia's economic future.

Australian scientists and technologists are contributing to the spectacular international growth of information technology, through the development of innovative computer hardware and software, networking systems, and advanced information storage and retrieval systems. Information technology is a growth industry that provides marketable commodities in its own right, but its greater contribution may be as a catalyst for the advancement of existing industries in Australia, which are showing encouraging signs of exploiting technology to improve their production efficiency, and to develop innovative products for local and export markets. It also provides a means of gaining access to a vast pool of information and ideas held in international data bases and overseas laboratories. Australia's substantial and continuing contribution to this pool has given it reciprocal rights to employ the information to its own advantage; the nation's prosperity during the next two centuries will be founded on the sharing of information with the international community, its own continuing intellectual vigour and a resurgence of the enterprise and industrial dynamism that characterised its earlier years.

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CHAPTER TWENTY-THREE

PRIVATE FINANCE

This chapter contains a special article on the deregulation of the Australian financial system, as well as statistics on the activities and structure of financial institutions including banks, building societies, insurance companies, finance companies, credit unions and co-operative societies together with descriptions of their operations and relevant controlling legislation.

DEREGULATION OF THE AUSTRALIAN FINANCIAL SYSTEM

Introduction

Since 1980 the Australian financial system has been transformed from a highly regulated and closed system into a more open and competitive one. The process of deregulation has advanced under successive federal governments. Underlying this process has been the belief that the financial markets would operate more efficiently if there was a minimum of government intervention. This article gives a brief resumé of the major events in the process of deregulation of the Australian finance system.

The financial system prior to 1980

The financial system regulations in operation by the late 1970s evolved from the war-time banking controls established in 1941. They were designed primarily to control the activities of the banks; non-bank financial institutions (NBFIs) faced little regulation until 1974. Generally, the NBFIs had developed in response to the inability of the regulated banks to provide certain services and facilities. Regulation of NBFIs came in 1974 with the enactment of the Financial Corporations Act which imposed certain requirements on NBFIs in respect of reporting and liquidity.

The banks were extended the privileges of having exclusive access to the cheque clearing system and to foreign exchange dealings, along with the guarantee of lender of last resort facilities from the central bank but, as a result, were subject to close regulation of the terms of their lending and deposit activities. Their asset structures were also regulated by means of investment restrictions, the Statutory Reserve Deposit (SRD) regulation and the Liquid Assets and Government Securities (LGS) convention.[1]

The *Banking Act* (1959) and the *Reserve Bank Act* (1959) were the main legislative vehicles of bank regulation. The Reserve Bank of Australia took over the central banking functions of the former Commonwealth Bank as a result of these Acts. The responsibilities of the Reserve Bank included the implementation and formulation of monetary policy, monitoring the operations of the financial system, and acting as the government's banker. The Reserve Bank was expected to use its powers in such a way as to best contribute to the stability of the currency of Australia, the maintenance of full employment in Australia and the economic prosperity and welfare of Australia.

The NBFIs that emerged in the post-war period included finance companies, building societies, credit unions and merchant banks. Each provided specialist services that the banks could not provide within the regulated environment.

Finance companies were created to service the consumer credit end of the market. Many of these companies were either established by banks as subsidiaries, or were existing companies in which the banks purchased shares (subject to regulated limits on shareholdings by banks in finance companies). The finance companies could raise funds by means unavailable to the banks and lend funds on terms and rates unavailable from the banks.

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[1] The Statutory Reserve Deposit (SRD) regulation requires trading banks to maintain a certain proportion of their deposits in an SRD account with the Reserve Bank. The Liquid Assets and Government Securities (LGS) convention required major trading banks to maintain a minimum set ratio of LGS assets (i.e. notes, coins, cash with Reserve Bank and all Commonwealth Government securities) to deposits.

Merchant banks provided such services as money and securities trading (including financial futures); longer-term financing; arranging working capital and finance for projects; advising on take-overs, mergers and foreign exchange cover; underwriting corporate and semi-government securities issues; providing portfolio management. Letters of credit, preference share placements and bill facilities were provided by certain merchant banks. Some of these services were outside the field of operations allowed to banks by the banking regulations.

Most banks established merchant banks as subsidiaries. This meant that the banks were not totally excluded from providing these types of financial services. Foreign banks were major participants in merchant banking. This provided foreign banks with a major vehicle by which they could participate in the finance market in Australia.

Notwithstanding that the banks often owned substantial shares of these NBFIs, the banks faced stiff competition for funds. The NBFIs were able to offer higher returns, and take commensurately higher risks, than the banks. In addition, the terms on which funds were lent by the NBFIs were more flexible and this too provided significant competition for the banks.

The Financial Corporations Act was enacted to allow the government, through the Reserve Bank, means to examine and regulate the activities of the NBFIs. This was to take place having regard to the matters of 'economic stability, the maintenance of full employment, the efficient allocation of the productive resources of the economy, the ensuring of adequate levels of housing finance and the economic prosperity and welfare of the people of Australia'.

The Reserve Bank was empowered under this Act to make determinations to ensure that the NBFIs maintained certain types of assets to a specified amount, to establish policies regarding the amount that could be lent and to whom it could be lent and to prohibit the charging or paying of interest above a specified ceiling.

The intentions in regulating financial markets in general were to facilitate the implementation of economic (monetary) policy, protect investors, promote competition and achieve certain social/sectoral policies. Initially, the most significant of these policies related to housing. The aim was to ensure that adequate funds were available at reasonable rates for home purchasers.

By the late 1970s it became apparent, with the increasing competition between financial institutions operating in a highly regulated environment, that the regulations themselves were creating distortions.

The banks were facing increasing pressure in attracting funds because of the relatively lower rates and terms they were permitted to offer to depositors. This meant that they had less funds available for lending for housing in particular. Restrictions as to who could provide deposits also hampered the savings banks' ability to attract funds. Similarly, restrictions on rates charged and the purpose of lending meant that banks were presented with an incentive to direct their lending towards more profitable types of lending—again, often not in favour of housing.

The process of deregulation—the banks

A 'Committee of Inquiry into the Australian Financial System', also known as the Campbell Committee, was established in January 1979 in response to the dissatisfaction of many sections of the Australian community with the existing state of affairs in the financial system. The Committee was to investigate the operations of the total financial system in Australia, not just banking.

The Committee's final report was tabled in Parliament in November 1981. In the meantime an interim report was released in May 1980. The interim report marked a turning point. Following its release the deregulatory process began to gain momentum.

Even before the interim report was released, some changes were being made. In May 1980 the limit on shareholdings by banks in merchant banks was increased. Banks were permitted to hold up to 60 per cent of the shares instead of the previous 33.3 per cent.

In December 1980, after the interim report had been released, most controls imposed on bank interest rates and deposits were removed. The direct result of this action was an immediate increase in the competitiveness of the banks. The relaxing of the controls meant that they were better able to compete with the NBFIs for depositors' funds.

The establishment of the Australian Bank Ltd. was announced in February 1981. This was the first new domestic trading bank in fifty years.

In anticipation that the Campbell Committee would actively support the entry of foreign banks into the Australian system, four of the six major banks sought permission to undertake mergers. In June 1981 the Treasurer gave permission for the merger of the Bank of New South Wales with the Commercial Bank of Australia and the merger of the National Bank of Australasia with the Commercial Banking Company of Sydney. The new banks became the Westpac Banking Corporation and the National Australia Bank, respectively.

The final report of the Campbell Committee recommended extensive deregulation of the financial system. These recommendations included, inter alia, that foreign banks should be allowed to operate in Australia either as licenced banks or as agencies of foreign banks, and they should be restricted to an 'off-shore' lending role but unable to borrow in the Australian market or to trade foreign exchange. The Committee also recommended that controls over exchange, deposits and interest rates should be abolished; that the exchange rate be determined by the market; and that there be greater emphasis on the supervision of banks with a minimum of regulation and government intervention.

Arising from these recommendations the restriction on trading bank lending growth was removed in June 1982. Previously it had been restricted to 12 per cent per annum.

In March of the same year, the Treasurer had announced that the requirement to give one month's notice of withdrawal from savings bank investment accounts was to be removed and that savings banks could accept small deposits (under $50,000) for fixed terms of between 30 days and four years. Trading banks had the minimum term for their small fixed deposits reduced from 3 months to 30 days, and the minimum term for larger fixed deposits (over $50,000) and certificates of deposit reduced from 30 days to 14 days.

Savings banks' ability to compete for deposits and lending was greatly enhanced after August 1982. The LGS ratio was reduced from 40 per cent to 15 per cent, the banks were permitted to accept deposits of up to $100,000 from profit-making bodies, and they were permitted to invest up to 6 per cent of their deposits without restriction.

January 1983 saw the announcement that the government had decided to allow the entry of about ten new banks, including foreign banks. Applications for new banking licences were to close on 31 May 1983, but in February this was extended to 30 June 1983.

The establishment of the Martin Review Group was announced in May 1983 to examine the Australian financial system and the Campbell Committee's recommendations. The review was to be conducted in the light of the newly-elected Labor Government's social and economic objectives. The question of new banks was to be deferred until the review was completed.

October 1983 saw the Reserve Bank grant trading banks greater flexibility to hold foreign currency balances. They were also permitted to quote their own foreign currency rates to their customers instead of the rates determined by the Reserve Bank.

Legislation was introduced in the South Australian Parliament in November 1983 which outlined the merger between the State Bank of South Australia and the Savings Bank of South Australia. Both were banks established and guaranteed by the legislation.[2] This merger was a response to the growing level of competition in banking and the finance market generally.

It was announced in December 1983 that the Australian dollar would be free to float on foreign exchange markets. At the same time it was announced that major parts of the exchange controls were to be abolished.

The Martin Review Group presented its report on the Australian financial system in February 1984. The report supported the continuation of the process of deregulation as well as the entry of new banks into the Australian system—by both foreign and domestic interests.

In April 1984 the formation of a new bank by the merchant bank Hill Samuel Australia Ltd was approved. The new bank was called the Macquarie Bank Ltd. It was the second new domestic bank which pre-dated the entry of new foreign banks. The bank commenced operations on 4 March 1985.

In May 1984 the Reserve Bank announced that loans made by banks to authorised dealers and secured by Commonwealth Government Securities, could be included in the banks' LGS ratio. This gave banks greater flexibility in managing this ratio with the aim of them releasing additional funds for credit creation purposes, at least in the short-term.

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[2] Banks established by Acts of State parliaments are not subject to federal banking legislation and regulation as they are guaranteed by their respective State governments. However, they generally comply with the liquidity standards established by the Reserve Bank.

The Treasurer, in April 1984, called for applications from NBFIs seeking an authority to deal in foreign exchange. In June it was announced that authorities were to be granted to 40 NBFIs. The granting of these authorities ended the exclusive access of the trading banks to this area of the financial system and allowed for much greater competition and choice.

The restriction that trading bank fixed deposits had to be held for at least 14 days was removed in August 1984. Banks could then pay interest on funds held for less than 14 days, including over-night funds. Payment of interest on cheque accounts was also permitted from this time.

The Bank of China had originally begun operating in Australia in July 1942. It returned its licence in 1972. In September 1984 it was announced that the Bank's licence was to be reactivated. This was possible by virtue of the fact that the Bank had originally commenced operations prior to World War II and its licence had never actually been cancelled.

Applications were invited in September 1984 for new banking licences. The deadline was set as 23 November. The new banks were expected to comply with official monetary policy requirements, to follow the prudential and liquidity guidelines, to be locally incorporated and to have a minimum of $A25m paid up capital. The latter requirement was to ensure that the new banks would be large enough to offer real and immediate competition.

In addition the Government indicated that it would prefer that there be at least 50 per cent Australian equity in the new bank. However, it was also announced that if an applicant could demonstrate that by being granted a licence it would bring substantial benefits to the Australian market, it may be granted a licence with a reduced Australian equity. At the same time the Treasurer announced that the Government intended to adopt another Martin Review Group recommendation and amend the Banks (Shareholdings) Act to permit a 15 per cent maximum equity for any one shareholder in a bank. The existing limit was 10 per cent.

The Government announced in February 1985 that sixteen of the forty-two applications for bank licences had been approved.

NEW BANKS WITH FOREIGN OWNERSHIP STRUCTURES GRANTED BANKING LICENCES ANNOUNCED IN FEBRUARY 1985

United States of America

Bank of America Australia Ltd, Sydney
Bank of America with G. J. Coles

Chase AMP Bank Ltd, Sydney
Chase Manhattan Bank with the AMP Society

Citibank Ltd, Sydney
Citibank NA

J. P. Morgan & Co. (Not taken up)

Bankers Trust Australia Ltd, Sydney
Bankers Trust Corporation

Canada

National Mutual Royal Bank Ltd, Melbourne
Royal Bank of Canada with National Mutual Life Association

United Kingdom

Barclays Bank Australia Ltd, Sydney
Barclays Bank

NatWest Australia Bank Ltd, Sydney
National Westminster Bank

Standard Chartered Bank Australia Ltd, Adelaide
Standard Chartered Bank with the State Government Insurance Commission of South Australia and Advertiser Newspapers Ltd (Adelaide)

New Zealand

Lloyds Bank NZA Ltd, Sydney
National Bank of New Zealand Ltd with Lloyds Bank PLC

Japan

Bank of Tokyo Australia Ltd, Sydney
The Bank of Tokyo

IBJ Australia Bank Ltd, Perth
The Industrial Bank of Japan with the Western Australian Development Corporation, Town and Country Building Society and State Government Insurance Office of W.A.

Mitsubishi Bank of Australia Ltd, Sydney
The Mitsubishi Bank with City Mutual Life Assurance Society and Howard Smith Ltd

Federal Republic of Germany

Deutsche Bank of Australia Ltd, Melbourne
Deutsche Bank AG

Hong Kong

Hong Kong Bank of Australia Ltd, Melbourne
The Hong Kong and Shanghai Banking Corporation with the Victorian Economic Development Corporation

Singapore

Bank of Singapore (Australia) Ltd, Melbourne
Oversea-Chinese Banking Corporation Ltd

The ceiling on interest rates on overdrafts of amounts less than $100,000 was removed in April 1985. In May 1985 the Reserve Bank introduced the Prime Assets Ratio (PAR) for the trading banks.[3] The Reserve Bank also outlined what its framework would be for supervising the adequacy of trading bank liquidity in so far as their operations within Australia in Australian dollars were concerned. It made similar announcements concerning foreign currency operations and the holding of assets in Australia bought with the foreign currency, and the extension of the PAR. In September 1985 the foreign investment controls in respect of shareholdings in merchant banks were suspended for an indefinite period.

April 1986 saw the lifting of one of the last remaining interest rate controls. As part of a package designed to assist the housing industry and the banks, the Government lifted the control on housing loan interest rates for loans of less than $100,000 where those loans were finalised after 2 April 1986. Loans finalised prior to that date remained protected by the former ceiling of 13.5 per cent.

The first of the new banks began operations in September 1985. By the beginning of August 1986 all banks granted new licences, with the exception of J. P. Morgan & Co., had commenced operations.

These deregulatory actions greatly increased the competition between the different banks and between the banks and the NBFIs. This was achieved by allowing banks greater flexibility in the scope of their operations and by allowing additional banks to enter the market. The entry of banks would not have been successful under the former, regulated environment.

Australia now has a banking industry which includes an increased number of banks. As a result Australians have increased access, via the new banks, to foreign markets, while foreign investors have greater access into Australian markets.

The process of deregulation—non-banks

Alongside the changes in banking regulations have been changes in the NBFIs' operating environment. The overall result has been to reduce the pre-deregulation distinctions between the different types of institutions.

As far as the NBFIs are concerned, the process of deregulation has meant that they have either been granted access to areas that were previously the exclusive province of the banks, or existing access has been improved. This has included direct access to foreign exchange markets, direct access by authorised dealers and the newly created reporting bond dealers[4] to the Reserve Bank for dealings in government securities, and the opportunity for many institutions to vary their status. Building societies have been particularly active in the latter area in recent times, several changing their status to savings banks. This has been achieved by way of merger or by simply applying for a change in status.

For example, in February 1985 the N.S.W. Building Society announced that it planned to seek savings bank status. It began operations as a savings bank in June 1985 under the new name of Advance Bank Australia Ltd. The Advance Bank has since merged with the Civic Permanent Building Society to establish the Civic Advance Bank Limited, which commenced its operations in June 1986 and has its headquarters in Canberra.

In addition, a partnership entered into by the Royal Bank of Canada and the National Mutual Life Association resulted in the National Mutual Royal Bank Limited, which commenced operation in February 1986. A subsequent merger by this bank with the National Mutual Permanent Building Society in N.S.W. resulted in the formation of the National Mutual Royal Savings Bank Limited and the National Mutual Royal Savings Bank (N.S.W.) Limited.

A new savings bank, which commenced operations on 21 April 1987, the Perth based Challenge Bank Limited, was established after a merger of the Perth Building Society and the Hotham Permanent Building Society of Victoria.

Building societies and credit unions, in an attempt to increase their competitiveness, have entered into agency agreements with some banks whereby the relevant bank acts as the building society's or credit union's agent at the cheque clearing houses. This has enabled the building societies and credit unions to offer chequing accounts to their customers. The clearing houses are owned by the banks and these negotiated agency agreements are the only means available to the building societies and credit unions to offer these accounts to their customers.

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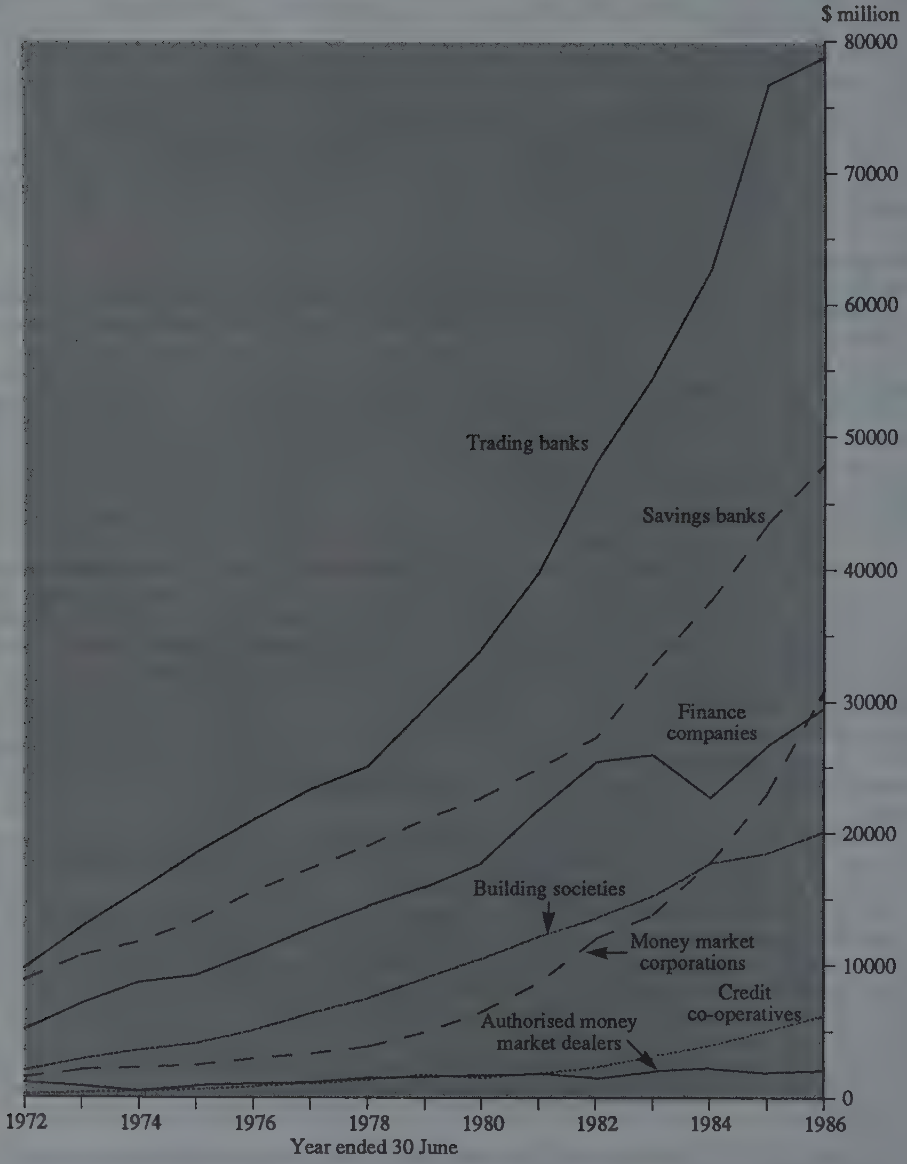
[3] The Prime Assets Ratio (PAR) requires each trading bank to hold at all times 'prime assets' equivalent to not less than 12 per cent of its total liabilities (other than shareholders' funds) within Australia. Prime assets include notes and coins, balances with the Reserve Bank, all Commonwealth government securities, and loans to authorised money market dealers secured against Commonwealth Government securities. The PAR prudential arrangement replaced the previous LGS convention.

[4] In November 1984 it was announced that 21 Reporting Bond Dealers were to be established with effect from January 1985. The RBA would deal with this group in Commonwealth Bonds where the period to maturity was greater than twelve months.

Building societies have been granted permission to issue credit cards. This area was previously available only to the banks.

In September 1985 the Government announced that it was setting aside, for a period of twelve months, the existing guidelines for foreign ownership of merchant banks. The decision

TOTAL ASSETS OF SELECTED FINANCIAL INSTITUTIONS



was taken to allow the merchant banks to become more competitive and to allow new merchant banks to enter the Australian market. It meant, in effect, that they could be 100 per cent owned by foreign investors. By June 1986 there were 30 new merchant banks in the Australian system.

Sharemarkets too have been deregulated. Relaxation of restrictions relating to ownership and incorporation of stock-broking firms and on commissions chargeable to clients, together with the granting of new stock exchange membership, has meant that this aspect of the finanical system has been made available to the banks through either partnerships or mergers with broking houses, or by gaining membership themselves of the stock exchanges. Foreign owners have also appeared on the share registers of broking companies as the restrictions on foreign ownership have been gradually relaxed.

Conclusion

The objective of deregulation was to create an environment where greater competition promoting financial innovation could bring about increased efficiency and fairness within the Australian financial system. While, to the casual observer, there is ample evidence of the changes that have taken place, particularly in the range of customer services offered by the various institutions and in the number of new names in the industry, many of the changes have been too recent to be reflected dramatically in the available statistics.

The graph above illustrates the growth in the assets of selected financial institutions over a period of 16 years. While this graph indicates some changes in the relative importance of different types of institutions, it is not necessarily indicative of future trends, which will depend on how well each type of institution competes in the deregulated environment. As deregulation reduces the institutionalised differences between the various institutions, so will the relevance of this type of comparison diminish.

MONEY

Currency

Australia has a decimal system of currency, the unit being the dollar which is divided into 100 cents. Australian notes are issued in the denominations of $2, $5, $10, $20, $50 and $100 and coins in the denominations of 1c, 2c, 5c, 10c, 20c, 50c and $1. The $1 note was replaced by the $1 coin in 1984.

For additional information on note issues and coinage, refer to the List of Special Articles towards the back of this *Year Book*.

AUSTRALIAN NOTES ON ISSUE

($ million)

	Last Wednesday in June					
	1981	*1982*	*1983*	*1984*	*1985*	*1986*
$1	74.1	78.8	81.4	58.2	45.1	43.7
$2	152.7	158.4	162.9	168.6	179.1	179.9
$5	153.9	165.6	174.1	183.1	192.1	202.2
$10	555.9	546.7	531.5	512.9	518.1	524.8
$20	2,060.0	2,169.8	2,195.8	2,235.6	2,284.9	2,285.2
$50	2,190.7	2,718.2	3,216.4	3,450.4	3,420.5	3,461.7
$100	—	—	—	595.6	1.542.4	2,238.6
Total	**5,187.3**	**5,837.5**	**6,362.2**	**7,204.5**	**8,182.1**	**8,936.1**
Held by banks	*578.1*	*677.4*	*712.6*	*786.7*	*833.3*	*894.3*
Held by public	*4,609.2*	*5,160.1*	*5,649.6*	*6,417.8*	*7,348.8*	*8,041.9*

AUSTRALIAN DECIMAL COIN: NET ISSUES BY RESERVE BANK

($ million)

	Year ended June					
	1981	*1982*	*1983*	*1984*	*1985*	*1986*
1c	1.5	1.4	1.2	1.0	1.1	1.3
2c	2.9	2.7	1.7	1.4	1.5	1.3
5c	5.1	5.0	3.4	3.5	2.7	3.8
10c	5.8	6.2	4.3	5.2	—	3.4
20c	14.8	12.8	9.0	6.9	(−)9.6	3.0
50c	12.1	26.8	22.1	9.4	1.2	(−)0.5
$1	—	—	—	107.2	86.6	25.5
Total	**42.1**	**54.9**	**41.7**	**134.6**	**83.5**	**37.8**

Volume of money

Statistics of the volume of money in the following table include notes and coins in the hands of the public, deposits of the public with trading banks (including the Reserve Bank) and deposits with all savings banks. Volume of money is a measure of specified financial assets held by the non-bank public.

The financial assets included in the volume of money in the table represent only part (albeit a major part) of the public's total holdings of liquid financial assets. An expanded view of the volume of money would include the public's holdings of such other claims as finance company debentures, deposits and shares of building societies, loans to authorised dealers in the short-term money market, government securities, etc.

VOLUME OF MONEY

($ million)

(*Source:* Reserve Bank of Australia)

Average of weekly figures for June	*Notes and coins in the hands of public*	*Deposits of public with all trading banks*			*Deposits with all savings banks(c)*	*Total volume of money*
		Current(a)	*Fixed(a)*	*Certificates of deposits(b)*		
1981	4,977	11,650	13,767	1,966	23,028	55,387
1982	5,570	11,325	16,948	3,002	24,808	61,653
1983	6,078	11,803	18,676	3,248	29,568	69,373
1984	6,983	12,663	19,393	3,850	34,051	76,940
1985	8,009	14,451	24,795	5,619	37,519	90,393
1986	8,717	14,637	32,427	4,725	41,625	102,132

(*a*) Excludes deposits of the Commonwealth and State Governments and inter-bank deposits. (*b*) Excludes holdings of the Commonwealth and State Governments and banks. (*c*) Interpolated 'weekly average' based on end-of-month figures.

FINANCIAL LEGISLATION

Commonwealth legislation for economic management

With Federation in 1901 the new Commonwealth Parliament was given power under Section 51 of the Commonwealth Constitution to legislate with respect to 'Banking, other than State Banking, also State Banking extending beyond the limits of the State concerned, the incorporation of banks, and the issue of paper money'. In 1911 the Commonwealth entered the field of banking with the establishment of the Commonwealth Bank of Australia, which conducted both trading bank and savings bank operations.

From 1911 to 1945 the functions of central banking became more and more the responsibility of the Commonwealth Bank, and in 1945 the Commonwealth Parliament directed it to act as a central bank. In the ensuing period of economic growth and financial development, the need for effective regulatory control of finance through banks became increasingly recognised. During 1959 the Commonwealth Parliament enacted the following legislation:

(*a*) The *Banking Act 1959* which applies to all banks operating in Australia, including the external territories of the Commonwealth, except State banks trading in their own State. The objects of the Act are:
  - (i) to provide a legal framework uniform throughout Australia for regulating the banking system;
  - (ii) to safeguard depositors of the banks from loss;
  - (iii) to provide for the co-ordination of banking policy under the direction of the Reserve Bank;
  - (iv) to control the volume of credit in circulation and bank interest rates; and
  - (v) to provide machinery for the control of foreign exchange.

(*b*) The *Reserve Bank Act 1959* which provides for the constitution and management of the Reserve Bank of Australia, the administration of the *Banking Act 1959* and the management of the Australian note issue.

(*c*) The *Commonwealth Banks Act 1959* which provides for the constitution and management of the Commonwealth Banking Corporation, Commonwealth Bank of Australia, Commonwealth Savings Bank of Australia, and the Commonwealth Development Bank of Australia.

Notwithstanding the provisions of the above legislation, recent Australian governments have sought to decrease the degree of regulation imposed on the Financial Sector, and on banking activity in particular. Specifically, controls on most bank interest rates and foreign exchange have been relaxed. In addition, eighteen new private banks have been granted licences to commence operations.

Information on more specific aspects of the growth and control of the banking industry is contained in earlier issues of the *Year Book* (Nos. 31, 37, 45, 46 and 61).

As a result of the further development of the financial market and the increasing significance in the market of the non-bank financial institutions such as finance companies, building societies and money market dealers, the *Financial Corporations Act 1974* was introduced. The object of this Act is to assist the government to achieve effective management of the Australian economy by providing a means for the examination and regulation of the activities of non-bank financial institutions having regard to economic stability, the maintenance of full employment, the efficient allocation of productive resources, the ensuring of adequate levels of finance for housing and the economic prosperity and welfare of the people of Australia. Details of the operation and application of the Act are given in *Year Book* No. 62, page 541.

Other Commonwealth legislation directly affecting financial institutions

Insurance

Section 51 of the Commonwealth Constitution confers the necessary powers on the Commonwealth Parliament to legislate with respect to 'insurance, other than State insurance; also State insurance extending beyond the limits of the State concerned'. Commonwealth legislation includes the *Marine Insurance Act 1909* defining the limits of marine insurance and regulating the terms of contracts, etc.; the *Life Insurance Act 1945* generally regulating life insurance business in Australia; the *Insurance Act 1973* generally regulating general (non-life) insurance business in Australia and the *Insurance (Agents and Brokers) Act 1984*. The *Marine Insurance Act 1909* has limited application.

Life Insurance Act 1945

The objects of this Act are:

(*a*) to replace all State legislation on the subject of life insurance except that relating to the life insurance operations of State government insurance offices within the State concerned, and to provide uniform legislation for the whole of Australia;

(*b*) to appoint a Life Insurance Commissioner to exercise active supervision of the activities of life insurance companies, with a view to securing the greatest possible protection for policy holders; and

(*c*) to set up adequate machinery for dealing with any company that fails to maintain a required minimum standard of solvency.

The Act came into operation on 20 June 1946. The Life Insurance Commissioner issues an annual report which contains detailed information on the operations of life insurance companies.

Insurance Act 1973

The objects of this Act are:

(*a*) to appoint an Insurance Commissioner to exercise active supervision of the financial activities of companies conducting general (non-life) insurance business, apart from State government insurance whether or not extending beyond the limits of the State concerned and other organisations specified in the Act, with a view to securing the greatest possible protection for policy holders; and

(*b*) to set up adequate machinery for dealing with any company that fails to maintain a required minimum standard of solvency.

The Act came into operation on 19 June 1973. The Insurance Commissioner issues an annual report which contains detailed information on the operations of insurance companies.

Insurance (Agents and Brokers) Act 1984

The prime objective of the Act is to regulate the activities of insurance agents and brokers with a view to strengthening the financial stability of the industry overall. The Act received Royal Assent on 25 June 1984 although most of its regulatory provisions did not become operative until 1 January 1986.

State legislation

In each State there exists legislation designed to regulate the activities and monitor the solvency position of particular types of financial institutions which operate on a co-operative basis and lend predominantly to members or consumers. In general, they form the groups covered later in this chapter under the headings of Permanent Building Societies, Co-operative Housing Societies and Credit Unions.

In some States there is also legislation for the incorporation of State government bodies which operate as banks or insurance offices. Though the regulations in Commonwealth legislation do not directly apply to these bodies, details of their operations have been included in the relevant parts of this chapter because they have agreed to supply information consistent with regulatory reports on a voluntary basis.

BANKS

Reserve Bank of Australia

The Reserve Bank of Australia preserved and continued in existence the orginal corporate body known as the Commonwealth Bank of Australia under the new name Reserve Bank of Australia.

The general functions of the Reserve Bank are set out in Section 10 of the *Reserve Bank Act 1959*, which states:

> 'It is the duty of the Board, within the limits of its powers, to ensure that the monetary and banking policy of the Bank is directed to the greatest advantage of the people of Australia and that the powers of the Bank under this Act, the *Banking Act 1959*, and regulations under that Act are exercised in such a manner as, in the opinion of the Board, will best contribute to:
> (*a*) the stability of the currency of Australia;
> (*b*) the maintenance of full employment in Australia; and
> (*c*) the economic prosperity and welfare of the people of Australia.'

Management

The policy of the Reserve Bank is determined by a Board consisting of the Governor (Chairman), the Deputy Governor, the Secretary to the Treasury, and seven other members appointed by the Governor-General. The Bank is managed by the Governor, who acts in accordance with the policy of the Board and with any directions of the Board. The Bank is required to inform the government of the monetary and banking policy of the Board. In the event of a disagreement between the government and the Board as to whether the monetary and banking policy of the Bank is directed to the greatest advantage of the people of Australia, the Governor-General, acting with the advice of the Executive Council, may determine the policy to be adopted by the Bank.

Central Banking business

Under the *Commonwealth Bank Act 1911* and the war-time powers conferred by the National Security Regulations, the Commonwealth Bank gradually assumed the functions of a Central Bank. Part III of the *Commonwealth Bank Act 1945* formally constituted the bank as a Central Bank and granted the necessary powers to carry on the business of a Central Bank, these powers being carried through into the present Act constituting the Reserve Bank.

Note Issue Department

The Note Issue Department, established in 1920 when the control of the Australian note issue was transferred from the Commonwealth Treasury to the Commonwealth Bank, was maintained in the same form under the *Reserve Bank Act 1959*. The Reserve Bank may, through this Department, issue, re-issue and cancel Australian notes.

Rural Credits Department

The Rural Credits Department, established in 1925 for the purpose of making short-term credit available for the orderly marketing of primary produce, was continued in the same form under the *Reserve Bank Act 1959*. The Reserve Bank may, through this Department, make advances upon the security of primary produce placed under the legal control of the Bank, or other security associated with the production or marketing of primary produce, to co-operative associations or marketing boards formed under the laws of the Commonwealth or a State or Territory of the Commonwealth or other bodies specified by proclamation. The period of the advance is not to exceed one year.

RESERVE BANK OF AUSTRALIA: LIABILITIES AND ASSETS
($ million)
LIABILITIES

				Deposits of trading banks				
30 June—	*Capital and reserve funds*	*Special reserve—IMF special drawing right*	*Australian notes on issue*	*Statutory reserve deposit accounts*	*Other*	*Deposits of savings banks*	*All other liabilities*	*Total*
1981 . . .	3,161	388	5,094	1,846	9	129	1,253	11,880
1982 . . .	2,553	352	5,838	2,118	23	195	1,667	12,747
1983 . . .	4,392	352	6,414	2,237	6	2	2,121	15,523
1984 . . .	4,266	305	7,237	2,409	13	1	2,658	16,888
1985 . . .	6,177	344	8,234	2,864	16	1	4,047	21,683
1986 . . .	6,602	371	8,915	3,289	22	2	4,841	24,042

ASSETS

30 June—	*Gold and foreign exchange (a)*	*Australian Government securities (b)*	*Loans, advances and bills discounted*	*Bank premises (c)*	*All other assets*	*Total*
1981	5,454	4,728	837	149	711	11,880
1982	6,519	4,771	573	160	724	12,747
1983	10,752	3,472	418	165	717	15,523
1984	12,261	2,872	749	170	837	16,888
1985	13,245	6,487	381	342	1,229	21,683
1986	12,698	9,539	142	374	1,289	24,042

(*a*) Includes currency at short call and International Monetary Fund drawing rights. (*b*) Includes Treasury bills and Treasury notes. (*c*) At cost, less amounts written off.

Trading banks

Commercial banking in Australia is conducted by twenty-eight trading banks. Three large private trading banks, together with the Commonwealth Bank of Australia, are generally referred to as the major trading banks. These banks provide widespread banking facilities throughout Australia. The remaining twenty-four banks comprise four overseas banks, three State-owned banks and seventeen private banks.

The major trading banks are: Commonwealth Bank of Australia; Australia and New Zealand Banking Group; Westpac Banking Corporation; and the National Australia Bank Limited.

Liabilities and assets

Balance sheet information contained in the following table does not relate to uniform accounting periods but rather to the balance dates of banks within the years shown.

AUSTRALIAN TRADING BANKS(*a*): LIABILITIES AND ASSETS(*b*)

($ million)

LIABILITIES

	Paid-up capital	*Reserve funds (used in business of banks) (c)*	*Final dividend proposed*	*Balance of profit and loss account*	*Total share-holders' funds*	*Balances due to other banks*	*Deposits, bills payable and other liabilities*	*Total*
1981	770	1,496	90	304	2,660	4,208	41,735	48,603
1982	1,057	1,673	108	368	3,206	6,613	51,444	61,263
1983	1,060	1,926	117	297	3,401	7,632	56,715	67,747
1984	1,259	2,309	143	431	4,143	12,152	62,219	78,514
1985	1,928	3,889	173	668	6,658	14,901	79,542	101,102
1986	3,276	4,986	200	1,039	9,502	23,326	108,746	141,574

ASSETS

			Australian public securities					
			Australian Government					
	Coin, bullion, notes and cash at Reserve Bank	*Money at short call overseas*	*Treasury bills and notes*	*Other securities*	*Local and semi-government securities*	*Other public securities*	*Other securities*	*Loans to authorised dealers in short-term money market*
1981	542	170	641	4,116	104	222	1,477	117
1982	579	399	754	5,023	57	95	2,431	38
1983	441	465	393	5,066	46	318	2,416	78
1984	482	532	426	5,745	36	332	3,069	175
1985	722	740	802	6,404	29	139	5,428	459
1986	1,111	994	1,597	6,639	90	992	7,525	1,446

	Statutory reserve deposit account with Reserve Bank	*Cheques and bills of, and balances with and due from other banks*	*Loans, advances and bills discounted*	*Bank premises, furniture and sites*	*Bills receivable and remittances in transit*	*All other assets*	*Total*
1981	1,826	3,143	26,588	597	2,011	7,047	48,603
1982	2,096	4,523	32,342	689	2,181	10,056	61,263
1983	2,212	5,295	35,257	843	2,056	12,861	67,747
1984	2,482	8,017	39,041	1,033	1,152	15,994	78,514
1985	2,970	9,415	52,514	1,327	1,771	18,382	101,102
1986	3,262	16,159	70,618	1,564	3,428	26,147	141,574

(*a*) Excludes the overseas banks and the State banks. (*b*) Relates to liabilities and assets both inside and outside Australia. (*c*) Includes inner reserves.

Figures shown in the following table are the averages of liabilities and assets within Australia (including external territories) of banks at the close of business on Wednesdays during the month of June for the years shown.

ALL TRADING BANKS: AVERAGE LIABILITIES AND ASSETS WITHIN AUSTRALIA

($ million)

LIABILITIES(*a*)(*b*)

Average of weekly figures for month of June	Deposits repayable in Australia				Balances due to other banks	Bills payable and all other liabilities to the public	Total
		Current					
	Fixed	Bearing interest	Not bearing interest	Total			
1982	21,614	1,261	10,628	33,503	1,140	11,194	45,837
1983	23,644	1,702	10,698	36,044	1,350	14,871	52,266
1984	24,925	2,135	11,364	38,424	1,997	19,100	59,521
1985	31,443	4,265	11,570	47,279	1,884	21,386	70,548
1986	38,650	3,648	12,038	54,336	4,070	34,863	93,270
1987	38,041	5,205	13,533	56,779	4,850	50,744	112,374

ASSETS(*b*)

Average of weekly figures for month of June	Coin, bullion, notes and cash at Reserve Bank	Australian Government securities		Local and semi-government securities	Loans to authorised dealers in short-term money market	Statutory reserve deposit account with Reserve Bank	Loans, advances and bills discounted	All other assets	Total
		Treasury bills and notes	Other securities						
1982	639	502	4,985	240	336	2,113	26,213	13,111	48,139
1983	620	538	5,395	123	193	2,238	28,687	16,858	54,653
1984	678	358	6,041	96	320	2,409	31,751	20,974	62,627
1985	748	1,118	6,535	457	311	2,861	39,272	25,374	76,677
1986	877	1,798	7,175	641	906	3,301	53,053	35,579	103,329
1987	868	3,512	7,324	542	760	3,455	60,937	45,624	123,023

(*a*) Excludes shareholders' funds. (*b*) Excludes inter-branch accounts and contingencies.

Branches and agencies

At 30 June 1987 the major trading banks operated 4,635 branches, and the other trading banks, 633 branches. Of the total 5,268 branches, 2,792 were located in metropolitan areas. Trading bank facilities were also available at 1,733 agencies throughout Australia.

Debits to customers' accounts

TRADING BANKS: AVERAGE WEEKLY DEBITS TO CUSTOMERS' ACCOUNTS(*a*)

($ million)

June	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	A.C.T.	Aust.
1982	17,918	13,027	3,448	1,700	2,501	334	96	568	39,593
1983	17,788	13,679	3,926	1,727	2,592	332	95	834	40,975
1984	26,971	19,075	5,389	2,124	3,449	402	167	1,223	58,800
1985	42,968	23,959	6,483	2,699	4,720	545	197	1,482	83,053
1986	58,972	26,514	6,765	3,194	5,289	502	220	1,894	103,352
1987	84,752	30,715	7,548	3,414	5,629	866	342	1,258	134,524

(*a*) Covers all trading banks and in addition the Rural Credits Department of the Reserve Bank and the Commonwealth Development Bank. Excludes debits to the Commonwealth and State Government accounts in capital cities.

More detailed statistics relating to trading banks may be found in the monthly publication *Major Trading Banks Australia* (5603.0), and the quarterly publication *Banking, Australia* (5605.0).

INTEREST RATES AT 30 JUNE 1986

	Per cent per annum
Fixed deposits (Less than $50,000)	
30 days	13.50
3 months	14.00
6 months	14.00
12 months	13.50
24 months	13.00
48 months	12.50
Overdrafts	
Less than $100,000	16.75/19.50
$100,000 and over	16.75/18.00

Savings banks

Savings bank business in Australia is conducted by seventeen banks. These comprise subsidiaries of the four major trading banks, three State-owned banks, seven private banks, two trustee banks and one overseas bank.

All savings banks, including trustee savings banks but not State savings banks, are subject to the *Banking Act 1959*.

Liabilities and assets

Balance sheet information contained in the following table does not relate to uniform accounting periods but rather to the balance dates of banks falling within the years shown.

SAVINGS BANKS(*a*): LIABILITIES AND ASSETS(*b*)
($ million)
LIABILITIES

	Paid-up capital	*Reserve Funds (used in the business of the bank)(c)*	*Balance of profit and loss account*	*Total share-holders' funds*	*Deposi-tors' balances*	*Balances due to other banks*	*Bills payable and all other liabilities*	*Total*
1981	92	613	51	757	17,520	16	484	18,777
1982	91	674	66	831	18,760	89	646	20,325
1983	141	658	49	847	23,680	73	752	25,352
1984	130	1,050	96	1,275	26,687	266	874	29,102
1985	564	642	146	1,351	28,856	246	1,048	31,500
1986	678	698	183	1,562	33,214	250	1,475	36,501

SAVINGS BANKS(*a*): LIABILITIES AND ASSETS(*b*)
($ million)
ASSETS

			Australian public securities			
			Commonwealth and State Governments			
	Coin, bullion, notes and deposits with Reserve Bank	*Deposits in Australia with trading banks*	*Treasury bills and notes*	*Other securities*	*Local and semi-government securities*	*Other securities*
1981	159	170	1,234	1,628	4,924	66
1982	154	184	1,368	1,530	4,733	105
1983	137	311	875	3,453	5,573	145
1984	68	209	82	4,551	6,444	146
1985	85	312	209	4,162	6,228	238
1986	104	506	758	4,342	5,008	442

SAVINGS BANKS(a): LIABILITIES AND ASSETS(b)

($ million)

ASSETS—*continued*

	Loans to authorised dealers in short-term money market	*Cheques and bills of, and balances with and due from other banks(c)*	*Loans advances and bills discounted*	*Bank premises, furniture and sites*	*Bills receivable and re-mittances in transit*	*All other assets*	*Total*
1981	29	210	9,903	235	2	217	18,777
1982	60	254	11,425	252	2	259	20,325
1983	277	263	13,722	273	3	320	25,352
1984	177	264	16,072	623	102	363	29,102
1985	310	585	18,295	659	12	405	31,500
1986	104	177	23,670	794	49	548	36,501

(*a*) Excludes the State banks. (*b*) Relates to liabilities and assets both inside and outside Australia. (*c*) Includes deposits with and loans to specified lenders other than trading banks.

Branches and agencies

At 30 June 1987 the savings banks operated 6,021 branches and 8,632 agencies of which 3,345 branches and 3,910 agencies were in metropolitan areas.

More detailed statistics relating to trading banks may be found in the monthly publication *Savings Banks, Australia* (5602.0), and the quarterly publication *Banking, Australia* (5605.0).

Development banks

Commonwealth Development Bank of Australia

The Commonwealth Development Bank of Australia was established by the *Commonwealth Banks Act 1959* and commenced operations on 14 January 1960. It was formed basically from an amalgamation of the Mortgage Bank and Industrial Finance Departments of the former Commonwealth Bank of Australia. The functions of the Development Bank are to provide finance for the purpose of primary production (which includes fishing, forestry and all forms of rural activity) and for the establishment or development of small business undertakings (i.e. with shareholders'/proprietors' funds not exceeding $5 million) in cases where such finance is not otherwise available on reasonable and suitable terms and conditions.

Two types of facility are provided—loans over medium to long terms and equipment finance over short terms. Loans to primary industry may be for all types of farm development, property purchase and restructuring of private mortgage debt. Loans to small businesses may be for establishment of new enterprises or for development of existing businesses in all sectors including manufacturing, retail and wholesale trade, transport, tourism, professions, entertainment and service industries. Equipment finance is provided for the acquisition of plant and vehicles for both primary industry and business undertakings. The Bank has widened its policy to lend for working capital and to re-finance loans from non-bank sources.

The Commonwealth Development Bank is managed by a General Manager under the Managing Director of the Commonwealth Banking Corporation and its policy is determined by the Board of that Corporation.

Australian Resources Development Bank Limited

The Australian Resources Development Bank Limited was established in 1967 with equity capital of $3 million subscribed by the major trading banks. It was given the status of a bank under the *Banking Act 1959* and opened for business on 29 March 1968. The main object of the Australian Resources Development Bank is to assist Australian enterprises to participate more fully in the development of Australia's natural resources. It provides finance to enterprises engaged in major developmental projects by direct loans, investing in equity capital or by refinancing loans made by trading banks acting individually or as a group. The Australian Resources Development Bank obtains funds by accepting deposits and by borrowing on the Australian and overseas capital markets.

The Primary Industry Bank of Australia Limited

The Primary Industry Bank of Australia Limited commenced operations on 22 September 1978 under the authority of the *Primary Industry Bank Act 1977*. The Bank has also been brought within the scope of the *Banking Act 1959* including those provisions relating to the protection of depositors, advances policy, control of interest rates, furnishing of statistics, and alterations in the structure and ownership of the Bank.

The main objective of the Bank is to facilitate the provision of loans to primary producers for longer terms than are otherwise generally available. The Bank's role is restricted to refinancing loans made by banks and other financial institutions with terms of eight years or more but not exceeding thirty years.

The equity capital of the Bank is $5.6 million consisting of six shares. Five shares are held by the Commonwealth Government and the major trading banks, while the sixth share is held equally by the four State banks.

REGISTERED BUILDING SOCIETIES

Permanent building societies

A permanent building society is defined as an organisation that:

- is registered under relevant State or Territory legislation;
- has not by its rules any fixed date or certain event or result when it is to terminate;
- is authorised to accept money on deposit;
- operates on a co-operative basis by borrowing predominantly from its members and providing finance to its members principally in the form of housing loans.

In 1976 a statistical collection was introduced covering the financial accounts of permanent building societies in all States and Territories of Australia. The statistics below summarise information collected from the 68 permanent building societies balancing in the 1985–86 financial year. More detailed descriptions and dissections of these statistics may be found in the annual publication *Permanent Building Societies: Assets, Liabilities, Income and Expenditure, Australia* (5632.0).

Information relating to the housing finance operations of permanent building societies is provided on page 832 and in the monthly publication *Housing Finance for Owner Occupation, Australia* (5609.0).

Summary statistics on the assets and selected liabilities of permanent building societies registered under the *Financial Corporation Act 1974* are given on pages 825 and 826.

PERMANENT BUILDING SOCIETIES: LIABILITIES AND ASSETS(*a*)

($ million)

Liabilities	*1985–86*	*Assets*	*1985–86*
Share capital and reserves:		Loan outstanding:	
Non-withdrawable shares	85.5	Owner occupied housing	12,091.2
Withdrawable shares	11,018.6	Other	2,779.1
Reserves—			
Statutory	31.2	Cash on hand	57.3
Other(*b*)	564.0	Placements and deposits with:	
Borrowings from residents:		Savings and Trading banks	1,087.9
Banks	310.4	Other financial institutions	215.6
Secured borrowings	789.7	Other businesses	46.8
Unsecured borrowings	7,439.4	Bills, bonds and other securities	3,504.6
Accounts payable	84.8	Accounts receivable	75.4
Other liabilities	160.8	Physical assets	577.4
		Other assest	49.0
Total liabilities	**20,484.3**	**Total assets**	**20,484.3**

(*a*) At the balance dates of societies within the financial year shown. (*b*) Includes accumulated surpluses and deficits.

PERMANENT BUILDING SOCIETIES: INCOME AND EXPENDITURE

($ million)

Expenditure	*1985–86*	*Income*	*1985–86*
Interest and dividends on withdrawable shares	1,132.2	Income on deposits with banks	131.6
Interest on:		Income from:	
Borrowings from banks	34.4	Placements and other deposits	36.8
Secured borrowings	73.4	Holdings of securities	480.6
Unsecured borrowings	914.3	Interest on loans	2,058.7
Wages and salaries	171.3	Management Fees	43.3
Management fees(*a*)	49.5		
Administrative expenses(*b*)	191.2	Other income	63.0
Other expenditure	142.7		
Total expenditure	**2,709.1**	**Total income**	**2,814.1**

(*a*) Represents payments made by societies to separate management companies. (*b*) Includes Permanent Building Society Association costs, advertising, bank charges and other administrative expenses.

Co-operative housing societies

A co-operative housing society is defined as an organisation that:

- is registered under the relevant State or Territory legislation;
- is not authorised to accept money on deposit;
- is only allowed to raise money on loans;
- only provides finance to its members in the form of housing loans;
- does not cause or permit applicants for loans to ballot for precedence or in any way make the granting of a loan dependent on any chance or lot.

The statistics below summarise information collected from the 2,332 co-operative housing societies balancing within the 1985–86 financial year. More detailed descriptions and dissections of these statistics may be found in the annual publication *Co-operative Housing Societies: Assets, Liabilities, Income and Expenditure, Australia* (5633.0).

CO-OPERATIVE HOUSING SOCIETIES: LIABILITIES AND ASSETS(*a*)

($ million)

Liabilities	*1985–86*	*Assets*	*1985–86*
Share capital(*b*)	0.1	Amount owing on loans(*b*)	1,855.7
Accumulated funds(*c*)	25.0	Cash on hand and current accounts at banks	11.9
Loans from:		Deposits with:	
Banks	359.6	Banks	10.0
Commonwealth/State Home Builders' Fund(*d*)	1,024.9	Others	28.0
Others	487.9	Physical assets	0.2
Other liabilities	11.5	Other assets	3.1
Total liabilities	**1,908.9**	**Total assets**	**1,908.9**

(*a*) At the balance dates of societies within the financial year shown. (*b*) Borrowing members' subscriptions have been offset against 'Amount owing on loans'. (*c*) Includes accumulated surpluses and deficits. (*d*) Refers to loans made through the Commonwealth/State Housing Agreements.

CO-OPERATIVE HOUSING SOCIETIES: INCOME AND EXPENDITURE

($ million)

Expenditure	*1985–86*	*Income*	*1985–86*
		Interest on:	
Interest paid on borrowing members' subscriptions	1.7	Loans to members	170.0
Interest on loans from:		Other	3.5
Banks	49.1		
Other	119.4	Management fees	12.9
Salaries and secretarial fees	12.6		
Other expenditure	5.3	Other income	5.0
Total expenditure	**188.1**	**Total income**	**191.4**

CREDIT CO-OPERATIVES

A credit co-operative (or credit union) is defined as an organisation that:

- is registered under relevant State or Territory legislation;
- operates on a co-operative basis by predominantly borrowing from and providing finance to its own members.

Credit co-operative annual financial account statistics were first collected on a national basis from all registered credit co-operatives for the year 1974–75 when there were 738 credit co-operatives with a total of 909,547 members. The number of credit co-operatives operating in 1985–86 was 454 with 2,311,228 members. Comprehensive financial account statistics are provided in the annual publication *Credit Co-operatives: Assets, Liabilities, Income and Expenditure, Australia* (5618.0).

Statistics on the assets and selected liabilities of credit co-operatives registered under the *Financial Corporations Act 1974* which have assets in Australia exceeding $5 million are provided on pages 825 and 826.

CREDIT CO-OPERATIVES: LIABILITIES AND ASSETS (*a*)

($ million)

Liabilities	*1985–86*	*Assets*	*1985–86*
Share capital and reserves—		Loan outstandings (*b*)	5,277.7
Paid-up share capital	19.5	Cash on hand	35.0
Reserves—		Placements and deposits—	
Statutory	106.7	Banks	115.0
Other (*c*)	186.9	Credit co-operative associations, etc.	459.1
Borrowings—		Other	142.5
Banks	40.1	Bills, bonds and other securities	220.8
Credit co-operative associations, etc.	61.6	Accounts receivable	35.6
Deposits	6,069.7	Physical assets	222.5
Other borrowings	15.8	Other assets	48.4
Accounts payable	31.6		
Other liabilities	24.7		
Total liabilities	**6,556.6**	**Total assets**	**6,556.6**

(*a*) At the balance dates of credit unions within financial year shown. (*b*) Net of unearned interest and allowance for doubtful debts. (*c*) Includes accumulated surpluses and deficits.

CREDIT CO-OPERATIVES: INCOME AND EXPENDITURE

($ million)

Expenditure	*1985–86*	*Income*	*1985–86*
Interest on borrowings—		Interest on deposits with banks	15.9
Deposits	635.3	Income from—	
Other borrowings	9.9	Placements and other deposits	79.8
Wages and salaries	117.5	Securities	32.0
Administrative expenses (*a*)	90.1	Interest on loans	847.4
Insurance premiums paid	11.7	Management fees	7.9
Allowance for doubtful debts	14.8	Bad debts recovered	2.2
Other expenditure (*b*)	78.5	Other income	28.2
Total expenditure	**957.7**	**Total income**	**1,013.4**

(*a*) Includes financial institutions duty. (*b*) Includes bank accounts debit tax.

SHORT-TERM MONEY MARKET

Authorised money market corporations

For some years prior to 1959, leading stockbrokers were actively engaged in operations which formed the basis of a short-term money market in Australia. The stockbrokers' operations involved the acceptance of short-term funds which were secured against government securities. These operations were severely limited by the lack of suitable short-term securities and by liquidity constraints. In February 1959 the Central Bank established the Official Short-Term Money Market by making available 'lender of last resort' facilities to selected dealers.

There are nine authorised money market dealers. Under the 'lender of last resort' arrangements, dealers may borrow from the Reserve Bank for a minimum of seven days and at a rate designed to discourage excessive recourse to the facility.
They are required by the Reserve Bank to:

- accept loans overnight, at call or for fixed periods, in minimum amounts of $50,000 and invest these funds in Commonwealth Government and other approved securities;
- at all times be willing traders in the buying and selling of approved securities;
- have a minimum paid-up capital of $400,000 and adhere to a maximum limit on the ratio of loans to shareholders' funds;
- consult regularly with the Reserve Bank on all money market matters and furnish detailed information about their portfolios, operations, interest rates, balance sheets and profit and loss accounts.

The following table contains details of selected liabilities and assets, and interest rates. Additional information on authorised dealers collected under the *Financial Corporations Act 1974* is provided on pages 825 and 826.

SHORT-TERM MONEY MARKET: SELECTED LIABILITIES AND ASSETS AND INTEREST RATES OF AUTHORISED DEALERS

(*Source:* Reserve Bank of Australia)

	Liabilities to clients			*Asset holdings (face value)*			*Interest rates on loans accepted during month*				*Weighted average interest rate on loans outstanding (c)*
							At call		*For fixed periods*		
	All trading banks	*Other clients*	*Total*	*C'wealth Govt securities (a)*	*Commercial bills(b)*	*Banks certificates of deposit*	*Minimum*	*Maximum*	*Minimum*	*Maximum*	
Month	*Average of weekly figures—($ million)*						*Per cent per annum*				
June—											
1982 . .	336	1,038	1,374	1,047	265	85	1.00	26.10	4.00	19.25	14.88
1983 . .	193	1,303	1,496	1,100	361	177	1.00	25.00	2.00	15.00	9.76
1984 . .	320	1,289	1,609	1,181	449	231	1.00	17.46	4.00	13.75	11.42
1985 . .	311	913	1,224	818	306	213	10.00	30.00	13.00	17.50	15.07
1986 . .	902	414	1,316	981	286	207	4.00	22.50	11.75	13.00	13.20
1987 . .	760	904	1,664	1,281	367	115	7.00	15.00	11.75	13.75	12.79

(*a*) Within 5 years of maturity. (*b*) Accepted or endorsed by banks. (*c*) Weighted average of rates paid on all days of the four or five weeks ending on the last Wednesday of the month.

Money market corporations

There are also companies without Reserve Bank 'lender of last resort' facilities which operate in a similar manner to authorised dealers. These companies are recognised under the *Financial Corporations Act 1974* in the category of money market corporations. This category consists of registered corporations whose short-term borrowings are a substantial proportion of their total outstanding provision of finance, which is mainly in the form of loans to authorised dealers in the short-term money market and other liquidity placements, business loans and investments in government, commercial and corporate paper.

The category of money market corporations also includes registered corporations providing short-term finance but which are themselves financed by related corporations with funds raised on a short-term basis, as well as corporations which borrow principally short-term and lend predominantly to related money market corporations.

Statistics on money market corporations registered under the *Financial Corporations Act 1974* are contained in the tables on pages 825 and 826.

FINANCE COMPANIES

Information presented on finance companies in Australia in the following tables has been compiled from returns collected under the *Census and Statistics Act 1905*. For the purpose of these statistics, a finance company is defined as an incorporated company or a group of incorporated companies related under Section 7 of the *Companies Act 1981*, mainly engaged in providing to the general public (businesses as well as persons in their private capacity) any of the following types of credit facilities:

- instalment credit for retail sales;
- personal loans;
- wholesale finance;
- factoring;
- other consumer and commercial loans;
- finance leasing of business plant;
- equipment and bills of exchange transactions.

A company is mainly engaged in providing these types of credit facilities if 50 per cent or more of its assets consist of balances outstanding with respect to such facilities, or if 50 per cent or more of its income is derived from such facilities.

The statistics for the financial year relate to those finance companies which have balances outstanding net of unmatured income in the prescribed types of credit facilities of $5 million or more in total on an Australia-wide basis. The 1983–84 annual census of finance companies indicated that companies thus included accounted for 99.1 per cent of the total net balances outstanding on prescribed credit facilities of all finance companies.

More detailed descriptions and dissections of these statistics may be found in the annual publication *Finance Companies: Assets, Liabilities, Income and Expenditure, Australia* (5616.0).

Due to differences in coverage and classification criteria and definitions of data items, the statistics for finance companies shown below are not comparable with the statistics, compiled from returns submitted under the *Financial Corporations Act 1974*, for finance companies and general financiers contained in the tables on pages 825 and 826.

FINANCE COMPANIES: ASSETS, LIABILITIES, INCOME AND EXPENDITURE(*a*)

($ million)

	1981–82	*1982–83*	*1983–84*
Assets—			
Balances outstanding on finance agreements(*b*)	20,573.1	22,855.4	22,927.7
Cash on hand and bank deposits	32.2	99.1	64.5
Loans to authorised money market dealers	19.4	11.7	10.6
Investments in shares and securities	354.0	452.6	548.8
Physical assets	208.6	227.8	266.4
Other assets	389.3	507.0	514.5
Total assets	**21,576.7**	**24,153.6**	**24,332.3**
Liabilities—			
Paid-up capital	1,305.7	1,348.2	1,551.9
Reserves	582.8	661.9	702.5
Unappropriated profits	551.3	645.1	809.6
Borrowed funds—			
Bank loans and overdrafts	419.6	435.5	456.4
Debentures	8,255.5	9,810.2	10,220.0
Secured and unsecured loans	8,696.1	9,273.0	8,726.1
Other liabilities	1,765.7	1,979.9	1,865.8
Total liabilities	**21,576.7**	**24,153.6**	**24,332.3**
Income for year—			
Interest from finance agreements	3,210.9	4,010.0	4,085.7
Other income	199.7	252.4	313.7
Total income	**3,410.6**	**4,262.4**	**4,399.5**
Expenditure for year—			
Interest on borrowed funds	2,160.8	2,758.8	2,773.5
Wages, salaries and allowances, directors fees and emoluments	288.5	340.9	370.4
Other expenditure	538.6	712.4	706.0
Total expenditure	**2,987.9**	**3,812.3**	**3,849.9**

(*a*) At the balance date of companies within the financial year shown. (*b*) Excludes unmatured income of $5,427.8m in 1981–82, $6,054.9m in 1982–83 and $6,064.3m in 1983–84.

FINANCIAL CORPORATIONS STATISTICS

The statistics provided in the following tables have been compiled from returns supplied to the Australian Bureau of Statistics by corporations registered under the *Financial Corporations Act 1974* (FCA). A summary of the objects and content of the Financial Corporations Act is given in *Year Book* No. 62, page 541.

More detailed descriptions and dissections of these statistics may be found in the monthly publications *Building Societies, Australia* (5637.0); *Authorised Dealers and Money Market Corporations, Australia* (5638.0); *Finance Companies, Australia* (5639.0) and *Credit Co-operatives, General Financiers and Other Financial Corporations, Australia* (5640.0).

Descriptions of the categories *building societies, credit unions/co-operatives, authorised money market dealers* and *money market corporations* appear in the respective parts of this chapter. Descriptions of the other categories are as follows:

Pastoral finance companies—comprising corporations whose provision of finance is predominantly in the form of loans to rural producers largely associated with the provision of rural services.

Finance companies—comprising corporations which rely substantially on borrowings in financial markets in Australia and/or from abroad and whose provision of finance is predominantly in the form of business and commercial lending, instalment credit to finance retail sales by others and/or other loans to individuals.

General financiers—comprising corporations which lend predominantly for business and commercial purposes, instalment credit to finance retail sales by others and/or other loans to individuals but which do not rely substantially on borrowings in financial markets in Australia and from abroad.

Intra group financiers—comprising corporations which predominantly borrow within a corporation group and/or provide finance by lending within their corporation group or by investing in financial markets.

Other financial corporations—comprising registered corporations not included in any other specific category.

FINANCIAL CORPORATIONS, AUSTRALIA: SELECTED LIABILITIES AND ASSETS(*a*) (*b*)

($ million)

SELECTED LIABILITIES AS AT 30 JUNE 1986

	Borrowings from—				
	Residents				
Category	*By acceptance of bills of exchange and issue of promissory notes*	*Related corporations*	*Banks*	*Other*	*Non-residents*
Building societies	—	62.9	364.4	18,348.8	68.4
Credit co-operatives	n.a.	n.a.	35.6	5,765.4	n.a.
Authorised money market dealers	n.a.	29.9	1,589.6	320.8	3.0
Money market corporations	1,145.5	1,099.6	1,833.9	17,165.0	6,663.2
Pastoral finance companies	—	1,196.1	87.0	720.4	277.9
Finance companies	589.0	1,037.1	1,275.5	20,534.6	1,245.8
General financiers	127.7	567.2	1,262.0	1,678.9	438.4
Intra group financiers	200.2	1,401.0	137.5	821.1	1,270.7
Other financial corporations	4.8	12.0	8.5	498.1	—
Total	**2,067.2**	**5,405.8**	**6,594.0**	**65,853.1**	**9,967.4**

ASSETS IN AUSTRALIA AT 30 JUNE 1986

Category	Cash and bank deposits	Loans to authorised dealers in the STMM and other placements and deposits	Bills of exchange and promissory notes purchased and held(c)	Other Government and public authority securities	Other securities	Other assets arising from the provision of finance (d)	All other assets in Australia	Assets overseas	Total assets
Building societies	999.9	199.3	2,270.5	1,063.7	235.6	14,587.2	771.4	—	20,127.6
Credit co-operatives	144.4	564.6	108.2	75.6	24.0	5,056.5	276.8	—	6,250.1
Authorised money market dealers	218.1	13.8	373.0	1,427.1	—	0.2	13.6	—	2,045.8
Money market corporations	1,814.3	5,960.2	6,098.5	796.1	1,539.7	12,416.3	1,282.4	1,011.7	30,919.2
Pastoral finance companies	45.3	353.4	62.3	—	547.8	3,491.0	506.6	289.8	5,296.2
Finance companies	160.6	996.5	315.6	15.5	475.2	26,859.5	735.0	15.4	29,573.3
General financiers	60.6	317.4	360.8	10.0	168.2	3,756.2	712.8	5.3	5,391.3
Intra group financiers	18.2	234.9	46.7	—	204.5	3,078.2	833.1	36.3	4,451.9
Other financial corporations	20.1	271.6	161.2	5.7	2.0	62.5	17.6	—	540.7
Total	**3,481.5**	**8,911.7**	**9,796.8**	**3,393.7**	**3,197.0**	**69,307.6**	**5,149.3**	**1,358.5**	**104,596.1**

(*a*) Excludes credit co-operatives and general financiers with assets not exceeding $5 million. (*b*) Excludes transactions with related corporations in the same FCA category. (*c*) Excludes bills that have been drawn or accepted by reporting corporations. (*d*) Includes holdings of bills that have been drawn by reporting corporations and loans that have been re-financed by the sale of bills accepted by reporting corporations.

CASH MANAGEMENT TRUSTS

A monthly statistical collection was introduced in May 1983 to obtain information on the operations of cash management trusts. A cash management trust is a unit trust which is governed by a trust deed, is open to the public, generally confines its investments to financial securities available through the short term money market, and whose units are redeemable by the trustee to the unit holder on demand.

The following table summarises the financial operations of cash management trusts.

CASH MANAGEMENT TRUSTS

June—	Number of Trusts	Units in issue at end of period ($million)	Weighted average net yield at end of period (% per annum)	Assets ($ million)					
				Cash and deposits with banks	All other deposits and loans	Bills of exchange purchased and held	Promissory notes purchased and held	Other assets	Total assets
1985	15	1,524.5	14.46	163.3	400.1	800.4	173.6	23.2	1,560.5
1986	18	3,181.1	14.39	229.0	435.5	1,877.8	694.3	70.1	3,306.7
1987	19	3,162.9	13.29	304.8	530.1	2,107.6	355.9	72.5	3,370.9

PUBLIC UNIT TRUSTS

A quarterly statistical collection was introduced in September 1985 to obtain information on the operations of listed and unlisted public unit trusts.

A public unit trust is defined as an arrangement (fund) which is governed by a trust deed between a management company and a trustee company; is open to the public within Australia for the purpose of investing the pooled funds of unitholders to yield returns in the form of income and/or capital gains; and allows unitholders to dispose of their units within a relatively short period of time. These statistics exclude cash management trusts, private trusts and trusts exempted from providing redemption facilities (e.g. film and agricultural trusts).

The major distinction between a listed and an unlisted unit trust is that a listed unit trust's units must be listed on Australian Stock Exchanges and adhere to listing requirements similar to those for company shares.

The following tables summarise the financial operations of public unit trusts.

UNIT TRUSTS: SUMMARY

			Assets ($ million)				
Quarter	*Number of Trusts*	*Units in issue at end of the period ($ million)*	*Shares*	*Property at the end of the quarter*	*Loan outstandings secured by mortgages on land and buildings*	*Other assets*	*Total assets*
			UNLISTED				
1984–85—							
June	197	4,077.0	n.a.	n.a.	n.a	n.a	4,781.8
1985–86—							
September	208	4,428.5	1,059.5	2,503.8	779.4	891.9	5,234.6
December	230	5,459.2	1,150.8	2,672.4	807.0	847.3	5,477.5
March	239	4,891.2	1,374.9	2,737.9	815.2	850.5	5,778.5
June	256	5,405.7	1,570.8	2,850.9	811.8	1,163.6	6,397.1
1986–87—							
September	259	6,157.2	2,098.7	3,046.1	813.3	1,304.0	7,262.2
			LISTED				
1984–1985—							
June	33	2,593.3	n.a.	n.a.	n.a.	n.a	3,248.0
1985–86—							
September	33	2,662.8	7.3	1,685.8	21.1	1,633.9	3,348.1
December	35	2,702.0	19.7	1,786.7	4.7	1,897.1	3,708.2
March	39	3,047.2	40.4	1,975.5	13.6	2,031.2	4,060.7
June	41	3,321.5	56.9	2,030.6	9.6	2,156.5	4,253.6
1986–87—							
September	41	4,548.6	86.7	2,260.5	6.7	2,261.0	4,614.9
			TOTAL				
1984–85—							
June	23	6,670.3	n.a	n.a.	n.a.	n.a.	8,029.8
1985–86—							
September	241	7,091.4	1,066.7	4,189.6	800.5	2,525.8	8,582.7
December	265	8,161.2	1,170.5	4,459.1	811.7	2,744.4	9,185.6
March	278	7,938.4	1,415.3	4,713.3	828.8	2,881.7	9,839.2
June	297	8,727.2	1,627.7	4,881.5	821.4	3,320.1	10,650.7
1986–87—							
September	300	10,705.9	2,185.4	5,306.6	820.0	3,565.0	11,877.1

LIFE INSURANCE

Statistics in the following tables have been derived from the publications of the Life Insurance Commissioner and relate to the life insurance business of companies with head offices in Australia and the Australian business of companies with head offices overseas. Also included are the life business operations voluntarily reported by three State Government Insurance Offices.

Forty-eight life offices conducted life insurance business in Australia during 1985.

Information contained in the following three tables does not relate to uniform accounting periods but to the balance dates of organisations falling within the calendar year shown.

LIFE INSURANCE OFFICES: LIABILITIES AND ASSETS
(**$ million**)

	1983	*1984*	*1985*
Liabilities—Australia and overseas—			
Total balances of revenue accounts at end of year	24,946.7	27,624.6	34,395.7
Reserves	279.0	698.9	899.1
Total	*25,225.7*	*28,323.5*	*35,294.8*
Other liabilities—			
Bank overdraft	109.5	280.9	104.6
Deposits	156.3	242.8	230.7
Claims admitted	142.7	165.4	188.3
Sundry creditors	261.9	233.8	377.9
Provisions for taxation	502.2	791.2	1,055.6
Provision for superannuation and long-service leave	57.9	54.0	63.4
Miscellaneous liabilities	95.4	83.8	78.0
Total liabilities	**26,551.6**	**30,175.6**	**37,393.3**
Assets—Australia and overseas—			
Property and fixed assets	5,815.1	5,660.3	7,144.2
Loans	2,999.4	3,298.5	3,742.4
Investment	16,380.7	19,372.0	23,539.5
Cash and deposits	380.5	766.0	1 683.8
Outstanding premiums including advances of premiums	344.0	368.7	417.5
Outstanding interest, dividends and rents	380.1	423.3	533.2
Sundry debtors	210.8	221.5	262.9
Miscellaneous assets	41.0	65.3	69.8
Total assets	**26,551.6**	**30,175.6**	**37,393.3**

LIFE INSURANCE OFFICES: REVENUE AND EXPENDITURE
(**$ million**)

	1983	*1984*	*1985*
Balance of Revenue Account at beginning of year—Australia and overseas	*21,563.5*	*24,950.9*	*27,620.4*
Revenue—			
Single premiums	455.2	977.6	1,368.8
Other premiums	3,331.3	3,443.5	4,089.4
Net interest	1,954.3	2,229.0	2,725.9
Net conversion and transfer values-in	2.7	35.9	(−)2.5
Net transfers from reserves and provisions within fund	(−)2.6	(−)433.8	(−)181.5
Other net transfers within statutory fund-in	—	—	(−)1.7
Net profit (or loss) on realisation or revaluation of assets	1,457.6	1,191.9	2,458.1
Miscellaneous income	(−)91.2	(−)840.7	1,214.1
Total revenue	**7,107.3**	**6,603.4**	**11,670.6**
Total	**28,670.8**	**31,554.3**	**39,291.0**
Expenditure—			
Claims by death and disability	506.5	536.8	592.1
Claims by maturity	918.5	757.8	840.7
Surrenders and bonuses in cash	1,250.9	1,440.3	1,922.2
Annuities	16.4	15.8	25.2
Commissions	386.3	435.1	516.8
Salaries	275.4	284.5	326.6
Contribution to staff superannuation	54.0	54.6	58.4
Taxes (other than those charged on interest dividends and rents)	32.1	33.0	36.0
Other expenses	257.1	275.9	346.1
Transfer out of statutory fund	26.8	95.8	231.2
Total expenditure	**3,724.0**	**3,929.6**	**4,895.3**
Balance of Revenue Account at end of year—Australia and overseas	*24,946.7*	*27,624.6*	*34,395.7*
Total	**28,670.8**	**31,554.3**	**39,291.0**

LIFE INSURANCE: SUMMARY

	Insurance and endowment policies			
	Number of policies ('000)	Sum insured ($ million)	Business issued by single premiums ($ million)	Annual premiums ($ million)
ORDINARY AND INDUSTRIAL BUSINESS				
New policies issued—				
1984	603	20,330	600.1	222.2
1985	599	23,423	836.8	263.4
1986	693	24,627	1,733.4	291.8
Policies discounted or reduced (*a*)—				
1984	646	11,381	..	127.8
1985	635	11,459	..	138.0
1986	619	13,268	..	146.4
Policies existing at end of—				
1984	5,920	97,452	..	1,113.4
1985	5,884	109,416	..	1,238.8
1986	5,958	120,775	..	1,384.2
SUPERANNUATION BUSINESS				
New policies issued—				
1984	160	21,931	407.9	488.0
1985	179	23,921	451.8	593.7
1986	247	42,267	788.4	805.8
Policies discontinued or reduced (*a*)—				
1984	76	11,415	..	329.1
1985	65	13,186	..	282.9
1986	64	15,156	..	373.8
Policies existing at end of—				
1984	1,161	93,371	..	2,008.2
1985	1,275	104,106	..	2,319.0
1986	1,458	131,217	..	2,751.0

(*a*) Includes transfers.

GENERAL INSURANCE

Statistics in the following tables have been derived from the publications of the Insurance and Superannuation Commissioner and returns collected under the *Census and Statistics Act 1905*. They measure the direct insurance of Australian risks. The statistics relate to the operations of:

(*a*) *Bodies corporate* authorised to carry on insurance business under the *Insurance Act 1973*;
(*b*) *Brokers* in respect of business placed with overseas insurers; and
(*c*) *Government instrumentalities*, i.e. State Government Insurance Offices and Commonwealth Government and State Government instrumentalities in respect of their general insurance business.

These statistics are based on the following definitions:

Premiums comprise the full amount receivable in respect of direct insurance and facultative reinsurance business written or renewed within Australia (including business placed overseas by Australian brokers) during the year less (*a*) outward facultative reinsurance within Australia, (*b*) stamp duty and fire service charges paid, and (*c*) returns, rebates and bonuses paid or credited to policy holders. Premiums are not adjusted to provide for premiums unearned at the end of the year and consequently the amounts differ from 'earned premium income' appropriate to the year.

Claims comprise, for direct insurance and facultative reinsurance business, payments made during the year plus the estimated amount of outstanding claims at the end of the year less the estimated amount of outstanding claims at the beginning of the year. Salvage and other amounts recoverable have been deducted.

In many instances brokers have no knowledge of claims made by the insured on overseas insurers in respect of business placed through them. Because of this, no details of claims are collected from brokers.

Information contained in the following tables does not relate to uniform accounting periods but to the financial years of the organisations which ended during the years shown.

GENERAL INSURANCE: PREMIUMS AND CLAIMS BY PRINCIPAL CLASS OF BUSINESS

($ million)

Class of business	*1983–84*	*1984–85*	*1985–86*
PREMIUMS(*a*)			
Fire(*b*)	434.4	426.7	508.7
House Owners' and House-holders	626.4	683.4	759.7
Contractors' All Risks	57.9	37.2	43.6
Marine and Aviation	163.6	156.1	176.1
Motor Vehicle Comprehensive	1,269.2	1,374.7	1,599.6
Compulsory Third Party (Motor Vehicle)	1,175.3	1,221.5	1,458.8
Employers Liability(*c*)	2,003.4	2,312.7	2,787.0
Public Liability(*d*)	229.1	248.3	345.7
All other	536.8	513.4	612.8
Total	**6,496.2**	**6,974.0**	**8,292.0**
CLAIMS(*e*)			
Fire(*b*)	262.1	305.0	413.4
House Owners' and House-holders	357.1	412.1	492.0
Contractors' All Risks	22.0	32.6	30.5
Marine and Aviation	110.1	97.4	113.4
Motor Vehicle Comprehensive	947.6	1,079.1	1,450.0
Compulsory Third Party (Motor Vehicle)	1,982.0	2,242.0	2,729.3
Employers Liability(*c*)	1,778.0	2,360.7	3,154.4
Public Liability(*d*)	197.5	195.4	241.2
All other	254.6	258.4	313.1
Total	**5,911.0**	**6,982.7**	**8,937.3**

(*a*) Includes premiums received by brokers 1981–82, $94.7 million; 1982–83, $145.1 million; 1983–84, $193.3 million. (*b*) Includes sprinkler leakage, loss of profits, and crop and hailstone insurance. (*c*) Excludes workers' compensation insurance in the coal mining industry in N.S.W. (*d*) includes product liability and professional indemnity insurance. (*e*) Excludes brokers.

SUPERANNUATION FUNDS AND SCHEMES

The following statistics have been compiled from several superannuation surveys conducted by the Australian Bureau of Statistics for the year 1984-85. Detailed definitions of data items are provided in ABS publications *Superannuation Funds, Australia 1984-85* (5649.0) and *Public Authority Pension and Superannuation Schemes, Australia* (5511.0).

The following types of superannuation schemes and funds, whose primary purpose is to provide benefits on retirement, are covered:

Private sector funds—
  Restricted membership funds—
    Employees' funds
    Self-employed persons' one member funds
    Self-employed persons' group funds
  Open funds
Public sector funds and schemes—
  Self-administered funds
  Life insurance offices' funds and schemes

Excluded from these statistics are:

- private sector funds that are wholly administered by life insurance offices;
- superannuation arrangements in the private sector that are unfunded (i.e. where the benefits are met from the employers' resources as they are payable);
- public sector schemes funded from Consolidated Revenue.

PRIVATE SECTOR FUNDS AND PUBLIC SECTOR SELF-ADMINISTERED FUNDS: INCOME, EXPENDITURE, ASSETS, LIABILITIES, MEMBERS AND PENSIONERS, 1984–85

($ million)

	Private sector funds					
	Restricted membership					
	Employees	*Self-employed group*	*Open funds*	*Total private sector*	*Public sector self administered funds*	*Total*
Income—						
Contributions—						
Employees	399.2	12.3	24.3	435.8	992.7	1,428.5
Employers	830.4	—	—	830.4	1,469.1	2,299.5
Interest, dividends and rent	1,189.7	15.1	20.3	1,225.1	1,502.8	2,727.9
Other Income	889.4	3.1	2.6	895.1	410.0	1,305.1
Total income	**3,308.7**	**30.5**	**47.2**	**3,386.4**	**4,374.6**	**7,761.0**
Expenditure—						
Pensions	111.8	—	—	111.8	949.9	1,061.7
Lump sum payments	929.7	6.4	25.9	962.0	970.3	1,932.3
Other expenditure	297.6	9.0	4.6	311.2	119.2	430.4
Total expenditure	**1,339.1**	**15.4**	**30.5**	**1,385.0**	**2,039.4**	**3,424.4**
Assets—						
Cash and savings and trading bank deposits	348.6	1.7	8.3	358.6	248.5	607.1
Placements with authorised dealers in the short term money market	178.9	4.0	1.2	184.1	162.1	346.2
Other placements and deposits	584.3	3.3	27.5	615.1	260.1	875.2
Bills of exchange and promissory notes held	545.0	3.9	0.7	549.6	598.8	1,148.4
Government and public authority securities	3,275.0	26.0	64.1	3,365.1	4,831.9	8,197.0
Other securities	4,431.9	33.5	64.9	4,530.3	2,014.8	6,545.1
Financial lease receivables	15.3	0.1	—	15.4	—	15.4
Loan outstandings	408.0	3.4	18.4	429.8	1,212.1	1,641.9
Other assets	3,961.3	64.5	106.8	4,132.6	5,213.2	9,345.8
Total assets	**13,748.3**	**140.4**	**291.9**	**14,180.6**	**14,541.6**	**28,722.2**
Liabilities—						
Accumulated Funds	13,603.5	139.1	290.3	14,032.9	14,310.1	28,343.0
Accounts payable and other liabilities	144.8	1.4	1.7	147.9	231.5	379.4
Total liabilities	**13,748.3**	**140.4**	**291.9**	**14,180.6**	**14,541.6**	**28,722.2**
Members at last balance date (No.)	94,712	13,607	89,482	197,801	772,853	970,654
Pensioners at last balance date (No.)	25,871	—	—	25,871	129,735	155,606
Funds (No.)	2,273	149	14	2,436	86	2,522

PUBLIC SECTOR LIFE INSURANCE OFFICE INVESTED SCHEMES: INCOME, EXPENDITURE AND MEMBERSHIP, 1984–85

($ million)

Income—	
Contributions—	
Members	26.6
Employers	47.9
Other income	89.8
Total income	**164.3**
Expenditure—	
Pensions	3.2
Lump sum payments	43.3
Other expenditure	34.0
Total expenditure	**80.5**
Members at last balance date (No.)	28,685
Funds (No.)	111

HOUSING FINANCE FOR OWNER OCCUPATION

The following tables present statistics of secured housing finance commitments made by significant lenders to individuals for the construction or purchase of dwellings for owner occupation. For more comprehensive statistics and detailed information on the scope and coverage of these statistics refer to the monthly publication *Housing Finance for Owner Occupation, Australia* (5609.0).

HOUSING FINANCE FOR OWNER OCCUPATION
($ million)

	Finance commitments for—				
	Construction or purchase of dwellings	*Alterations and additions*	*Cancellations of commitments*	*Commitments advanced (a)*	*Commitments not advanced (a)*
1983–84	10,640.6	640.5	389.8	8,938.3	2,043.0
1984–85	12,925.5	596.6	505.4	11,951.4	2,594.3
1985–86	11,533.7	507.2	507.7	11,919.0	2,217.4

(*a*) Prior to January 1985, excludes Trading Banks.

HOUSING FINANCE FOR OWNER OCCUPATION: NUMBER OF DWELLING UNITS AND VALUE OF COMMITMENTS TO INDIVIDUALS BY TYPE OF LENDER

	Banks		*Permanent building societies*	*Other lenders (a)*	*Total*
	Savings	*Trading*			
CONSTRUCTION OF DWELLINGS					
			—number—		
1983–84	28,642	6,351	14,558	8,342	57,893
1984–85	34,903	7,139	14,521	6,167	62,730
1985–86	30,482	7,917	7,955	5,501	51,855
			—$ million—		
1983–84	883.4	183.3	586.1	288.6	1,941.4
1984–85	1,259.2	250.7	656.1	248.0	2,414.0
1985–86	1,173.3	297.9	379.2	230.4	2,080.8
PURCHASE OF NEWLY ERECTED DWELLINGS					
			—number—		
1983–84	9,667	2,268	4,748	5,415	22,098
1984–85	10,224	1,912	5,978	3,650	21,764
1985–86	10,139	2,235	3,880	3,617	19,871
			—$ million—		
1983–84	313.5	56.7	199.7	217.7	787.5
1984–85	383.6	75.4	293.7	161.3	914.0
1985–86	406.9	92.3	203.9	153.5	856.6
PURCHASE OF ESTABLISHED DWELLINGS					
			—number—		
1983–84	117,558	24,422	66,448	26,066	234,494
1984–85	135,908	20,599	63,763	18,729	238,999
1985–86	122,005	22,930	40,638	18,562	204,135
			—$ million—		
1983–84	3,684.7	723.0	2,585.6	918.5	7,911.8
1984–85	5,055.8	855.4	2,869.3	817.1	9,597.5
1985–86	4,798.9	1,046.5	1,892.8	858.1	8,596.3
TOTAL					
			—number—		
1983–84	155,867	33,041	85,754	39,823	314,485
1984–85	181,035	29,650	84,262	28,546	323,493
1985–86	162,626	33,082	52,473	27,680	275,861
			—$ million—		
1983–84	4,881.5	963.0	3,371.4	1,424.8	10,640.6
1984–85	6,698.6	1,181.4	3,819.1	1,226.4	12,925.5
1985–86	6,379.1	1,436.7	2,476.0	1,242.0	11,533.7

(*a*) Includes co-operative housing societies, finance companies, governments, credit co-operatives and insurance companies.

PERSONAL, COMMERCIAL AND LEASE FINANCE

Three new monthly collections were introduced in January 1985 to measure the lending activity of significant lenders in the fields of personal, commercial and lease finance. These collections replaced two previous collections, the results of which were published in *Finance Companies, Australia* (5614.0) and *Instalment Credit for Retail Sales, Australia* (5631.0).

Personal finance

The following tables present statistics of finance commitments made by significant lenders to individuals for their own personal (non-business) use. For more comprehensive statistics and detailed information on the scope and coverage of these statistics refer to the monthly publication *Personal Finance, Australia* (5642.0).

PERSONAL FINANCE COMMITMENTS(*a*): TYPE OF LENDER

($ million)

	All banks	*Finance companies*	*Credit Co-operatives*	*Other lenders(b)*	*Total*
1985–86	9,764.0	3,252.0	1,659.0	229.9	14,905.1
1986–87	10,166.3	2,926.9	1,771.0	365.7	15,229.9

(*a*) Includes both fixed loan facilities and new and increased lending commitments under revolving credit facilities. (*b*) Includes permanent building societies, general financiers, retailers, and for 1985–86 only, life insurance companies.

PERSONAL FINANCE COMMITMENTS: TYPE OF FACILITY, ALL LENDERS

($ million)

		Revolving credit commitments			
				Credit limits	
	Fixed loan commitments	*New and increased credit limits*	*Cancellations and reductions in credit limits*	*Total*	*Used*
1985–86(*a*)	10,635.1	4,270.1	2,316.3	13,084.2	5 501.1
1986–87	9 754.4	5 475.4	2 558.4	16 993.4	7 665.1

(*a*) Includes commitments for loans on life policies.

Commercial finance

The statistics in the following tables measure commercial finance commitments made by significant lenders to government, private and public enterprises and non-profit organisations as well as to individuals (for investment and business purposes). For more comprehensive statistics and detailed information on the scope and coverage of these statistics refer to the monthly publication *Commercial Finance Australia* (5643.0).

COMMERCIAL FINANCE COMMITMENTS(*a*): TYPE OF LENDER

($ million)

	Trading banks	*Other banks*	*Finance companies*	*Money market corporations*	*Other lenders(b)*	*Total*
1985–86	38,426.9	2,387.1	7,986.1	11,670.7	845.7	61,316.5
1986–87	57,647.0	3,189.9	6,949.6	9,132.4	203.2	77,122.0

(*a*) Includes both fixed loan facilities and new and increased lending commitments under revolving credit facilities. (*b*) Includes permanent building societies, general financiers and pastoral finance companies.

COMMERCIAL FINANCE COMMITMENTS: FIXED LOAN FACILITIES

($ million)

	Construction	Purchase of real property	Purchase of plant and equipment	Refinancing	Other purposes	Total
1985–86	3,535.9	4,622.9	2,197.0	2,653.7	12,391.8	25,401.2
1986–87	3,455.9	4,484.1	2,031.9	2,579.5	10,831.9	23,383.2

COMMERCIAL FINANCE COMMITMENTS (*a*) INDUSTRY OF BORROWER

($ million)

	1985–86			*1986–87*		
Industry of borrower	*New fixed loan commitments during period*	*New and increased credit limits during period*	*Total new commitments during period*	*New fixed loan commitments during period*	*New and increased credit limits during period*	*Total new commitments during period*
Agriculture, forestry, fishing & hunting	2,186.2	2,487.4	4,673.6	1,712.0	3,197.5	4,909.5
Mining	656.7	1,350.7	2,007.4	537.4	2,745.9	3,283.3
Manufacturing	2,255.8	6,289.6	8,545.4	1,928.1	10,196.3	12,124.4
Construction	3,247.9	2,195.0	5,442.9	3,527.2	2,555.7	6,082.9
Wholesale Trade	1,346.2	2,223.2	3,569.4	1,223.8	2,657.0	3,880.8
Retail Trade	2,245.1	3,190.4	5,435.5	1,831.0	4,001.1	5,832.1
Transport & storage	863.7	1,591.2	2,454.9	757.5	1,116.2	1,873.7
Finance, investment and insurance	4,479.7	8,534.9	13,014.6	4,362.7	14,189.3	18,552.0
Property and business services	2,997.6	3,232.8	6,230.4	3,205.7	7,132.4	10,338.1
Other industries	5,122.2	4,820.1	9,942.3	4,297.7	5,947.4	10,245.1
Total industries	**25,401.2**	**35,915.3**	**61,316.5**	**23,383.2**	**53,738.8**	**77,122.0**

(*a*) Includes both fixed loan facilities and new and increased lending commitments under revolving credit facilities.

Lease finance

The statistics in the following tables measure lease finance commitments made by significant lenders to trading and financial enterprises, non-profit organisations, governments, public authorities and individuals. For more comprehensive statistics and detailed information on the scope and coverage of these statistics refer to the monthly publication *Lease Finance, Australia* (5644.0)

LEASE FINANCE COMMITMENTS: TYPE OF LESSOR

($ million)

	All banks	Money market corporations	Finance companies	General financiers	Total
1985–86	1,150.5	319.4	3,848.2	274.4	5,592.6
1986–87	1,233.6	287.7	3,420.9	575.2	5,517.4

LEASE FINANCE COMMITMENTS: TYPE OF GOODS LEASED

($ million)

Type of goods	*1985–86*	*1986–87*
Motor vehicles & other transport equipment	3,084.2	2,939.1
Construction & earth moving equipment	444.2	317.4
Agricultural machinery & equipment	216.6	150.3
Automatic data processing equipment and office machinery	439.7	765.5
Shop & office furniture, fittings & equipment	450.8	580.8
Other goods	957.0	764.3
Total	**5,592.6**	**5,517.4**

LEASE FINANCE COMMITMENTS: INDUSTRY OF LESSEE

($ million)

Industry of lessee	*1985–86*	*1986–87*
Agriculture, forestry, fishing & hunting . .	437.4	346.7
Mining	146.4	92.7
Manufacturing	714.9	691.3
Construction	495.9	451.2
Wholesale Trade	314.9	289.3
Retail Trade	738.0	698.2
Transport & storage	794.4	812.9
Finance, investment and insurance	196.2	499.9
Property and business services	699.9	687.1
Community Services	296.5	221.7
Other industries	758.1	726.3
Total industries	**5,592.6**	**5,517.4**

NEW CAPITAL RAISINGS BY COMPANIES LISTED ON AUSTRALIAN STOCK EXCHANGES

Information relating to capital raised by companies listed on Australian Stock Exchanges is given in the following table.

LISTED COMPANIES: NEW CAPITAL RAISED THROUGH ISSUES OF SHARES (*a*) AND THROUGH DEBENTURES, UNSECURED NOTES, LOANS AND DEPOSITS

($ million)

	Share capital				*Debentures, unsecured notes, loans and deposits*			
	Total amount of issues commenced				*Period to maturity (b)*			
	Type of consideration							
Year ended June	*Cash*	*Other than cash (c)*	*Total amount including premiums etc.*	*Net cash raised during period (d)*	*12 months or less*	*Over 12 months*	*Total (e)*	*Total Capital*
NEW CAPITAL RAISED								
1981	2,530.3	1,642.1	4,172.4	2,627.1	8,544.7	3,329.1	11,873.8	14,500.9
1982	1,379.5	890.1	2,269.6	1,593.7	10,836.4	3,534.5	14,370.9	15,964.6
1983	908.8	299.3	1,208.1	1,013.5	8,970.6	3,393.7	12,364.3	13,377.8
1984	2,153.8	736.6	2,890.4	1,758.0	9,983.1	3,227.2	13,210.3	14,968.3
1985	2,102.9	779.9	2,882.8	2,178.1	10,113.1	4,096.1	14,209.2	16,387.3
1986	3,992.4	1,164.3	5,156.7	4,013.9	14,736.5	5,993.3	20,729.8	24,743.7
REDEMPTIONS								
1981	—	—	—	—	8,019.9	2,063.3	10,083.2	10,083.2
1982	—	—	—	—	10,089.0	2,412.1	12,501.1	12,501.1
1983	—	—	—	—	9,291.0	2,569.8	11,860.8	11,860.8
1984	—	—	—	—	10,018.3	2,644.4	12,662.7	12,662.7
1985	—	—	—	—	9,748.5	2,550.5	12,299.0	12,299.0
1986	—	—	—	—	14,990.2	4,093.4	19,083.6	19,083.6
NET CASH RAISED								
1981	2,530.3	1,642.1	4,172.4	2,627.1	524.8	1,265.8	1,790.6	4,417.7
1982	1,379.5	890.1	2,269.6	1,593.7	747.4	1,122.4	1,869.8	3,463.5
1983	908.8	299.3	1,208.1	1,013.5	(−)320.4	823.9	503.5	1,517.0
1984	2,153.8	736.6	2,890.4	1,758.0	(−)35.2	582.8	547.6	2,305.6
1985	2,102.9	779.9	2,882.8	2,178.1	364.6	1,545.6	1,910.2	4,088.3
1986	3,992.4	1,164.3	5,156.7	4,013.9	(−)253.7	1,899.9	1,646.2	5,660.1

(*a*) Includes share subscriptions by overseas investors to issues in Australia. (*b*) Period from date of issue to maturity. Securities that are repayable at call or on an indefinite date are included in the "12 months or less" period. (*c*) Includes bonus issues, conversion issues, issues in exchange for existing shares, etc. (*d*) Includes calls on issues commenced in earlier years. (*e*) Includes conversions, renewals, etc.

These statistics cover capital raised through share and debenture subscriptions and by way of deposits, unsecured notes and loans secured over the entire assets of the company. The following funds are excluded from the collection:

- all capital raised from Australian banks (other than direct equity investment), i.e. overdrafts, mortgage loans, terms loans or debentures;
- temporary advances or short-term deposits from any source;
- complete or partial issues by Australian companies on overseas markets taken up through overseas brokers.

Listed companies are companies incorporated in Australia whose shares, debentures or other securities are listed on one or more of the Australian Stock Exchanges. For such companies new capital includes:

- all issues of ordinary shares if any ordinary shares are listed;
- all issues of preference shares if any preference shares are listed;
- all issues of debentures, unsecured notes, secured and unsecured loans and deposits if any shares or other securities are listed.

More detailed statistics concerning New Capital Raisings may be found in the quarterly publication *New Capital Raisings by Companies Listed on Australian Stock Exchanges* (5628.0).

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CHAPTER TWENTY-FOUR

PUBLIC FINANCE

This chapter deals with the financial activities of the organisations which make up the three levels of government in the Australian political system—Commonwealth, State and local—and which collectively constitute the public sector. An account is given of the activities of each level of government, with particular emphasis being given to the Commonwealth Government. Tables are then presented which bring together the transactions of all public non-financial enterprises to highlight the role in the Australian economy of the public sector as a whole. Then follows a section on government borrowing activities at all levels. A special article covering the development of Commonwealth–State financial arrangements is included at the end of the chapter.

Concepts and definitions used in public finance statistics

The tables below (except those explicitly sourced to Budget Papers) are provided from the system of government finance statistics (GFS). To assist users in understanding the statistics presented in these tables, a separate publication *Classifications Manual for Government Finance Statistics, Australia* (1217.0) has been produced. It outlines the major concepts used, provides definitions of the enterprise unit used for GFS collections and the categories in each of the main unit, and of transactions classifications employed. The GFS classifications used in the tables that follow are:

- the *Economic Transactions Framework* (ETF) which categorises outlays, revenue, grants received and financing transactions according to their economic character to facilitate study of the macroeconomic effect of government activity on the economy and to provide the basic building blocks for grouping transactions to be incorporated into the Australian National Accounts;
- the *Taxes, Fees and Fines Classification* (TFFC) which dissects this major form of government revenue according to the type of tax, fee or fine collected; and
- the *Government Purpose Classification* (GPC) which is used to group outlays with similar functions to facilitate study of the broad purposes of public sector spending and assessment of the effectiveness of outlays in meeting government policy objectives.

Commonwealth Government finance

Financial provisions of the Constitution

The main provisions of the Constitution relating to the initiation and development of the financial system of the Commonwealth of Australia are contained in Sections 81 to 105A of the Commonwealth Constitution.

Two other sections which have a most important bearing on questions of Commonwealth finance are Sections 69 and 51. Section 69 provides for the transfer from the States to the Commonwealth of certain specified departments, and Section 51, in outlining the powers of the Commonwealth Parliament, implies the transfer or creation of other departments.

Sections 87 and 96 of the Constitution deal with the financial relations between the Commonwealth and the States. The full text of the Financial Agreement of 1927 was given in *Year Book* No. 31, page 21; accounts of this Agreement as affected by subsequent Agreements were included in later issues of the *Year Book* up to No. 37; details of the main provisions appeared in further issues of the *Year Book* up to No. 50. For details of current provisions for financial assistance to the States reference should be made to the Commonwealth Budget Paper No. 7 *Payments to or for the States, the Northern Territory and Local Government Authorities, 1986–87*.

The *Audit Act 1901* lays down the procedure which must be followed in accounting for the receipt and disbursement of public funds. The general administration of Commonwealth Government finances is the responsibility of the Commonwealth Minister for Finance.

Commonwealth Government Budget

The Commonwealth Government Budget records the transactions of those enterprises of the Commonwealth Government whose receipts and payments are summarised in the statements of Public Account balances. In 1985–86 the change in cash balances was represented by the following:

	$'000
Net Cash receipts of the Consolidated Revenue Fund	65,513,488
plus cash receipts of Loan Fund	37,498,087
plus cash receipts of Trust Fund	6,310,132
Total	*109,321,707*
less cash payments from Consolidated Revenue Fund	65,513,488
less cash payments from Loan Fund	37,498,016
Less cash payments from Trust Fund (including decrease in investments of the Trust Fund)	5,869,176
Total	*108,880,680*
equals increase in cash balances	441,027

Revenues from taxation and other sources are paid into the Consolidated Revenue Fund, from which the main expenditures are for defence, social services, payments to the States and general administration. The Trust Fund covers special transactions outside the ordinary operations of departmental expenditures, such as pension funds and moneys held for expenditure by the Commonwealth Government at some future time. The Loan Fund receives its funds from the sale of the Commonwealth Government securities, and the expenditures from the Fund are made in accordance with the purpose of issue of each loan. The main disbursements from the Loan Fund are to the States by way of distribution of the proceeds of loans raised by the Commonwealth Government on their behalf and by capital assistance grants, the remaining disbursements being mainly for Commonwealth Government purposes.

The estimated outlay, revenue and deficit of the Budget for 1986–87 are set out in the table which follows, together with figures for the years 1981–82 to 1985–86. The national accounting presentation of the Budget is shown in order to be consistent with other transactions figures given in this chapter.

It should be noted that some transactions undertaken by enterprises covered by the Budget are not reflected in the change in cash balances, usually because they are not cash transactions or because a receipt and a payment are offset against each other so that only a net amount is included in published totals. The national accounting presentation of the Budget includes these additional transactions.

OUTLAYS, REVENUE AND DEFICIT OF THE COMMONWEALTH BUDGET

($ million)

(*Source:* Budget Paper No. 1 *Budget Statements 1986–87*)

	1981–82	*1982–83*	*1983–84*	*1984–85*	*1985–86*	*1986–87 Budget Estimates*
Outlay—						
Net expenditure on goods and services—						
Current	7,548	8,567	9,964	11,201	12,634	14,010
Capital (*a*)	205	340	275	377	409	491
Total	7,753	8,907	10,239	11,578	13,043	14,501
Transfer payments—						
Personal benefit payments	12,790	15,588	18,399	20,677	22,373	24,149
Grants to States and Northern Territory	13,181	15,388	17,780	19,637	20,997	22,425
Grants to non-profit institutions	132	506	603	729	777	927
Interest paid	2,881	3,378	4,334	5,664	7,088	7,547
Transfers overseas	638	697	749	834	832	792
Subsidies	1,308	1,204	1,229	1,346	1,358	1,100
Grants for private capital purposes	192	241	328	388	331	307
Transfers to non-budget sector (*b*)	1,288	1,481	1,590	1,886	2,249	2,443
Other Transfers n.e.c.	35	51	59	71	81	114
Total	32,445	38,535	45,071	51,234	56,085	59,804

OUTLAYS, REVENUE AND DEFICIT OF THE COMMONWEALTH BUDGET—*continued*

($ million)

(*Source:* Budget Paper No. 1 *Budget Statements 1986–87*)

	1981–82	*1982–83*	*1983–84*	*1984–85*	*1985–86*	*1986–87 Budget Estimates*
Net advances—						
States and Northern Territory	866	1,056	1,002	799	783	535
Non-budget Commonwealth Authorities	13	183	−18	−16	−102	−125
Other sectors	111	111	136	116	106	48
Total	990	1,349	1,120	899	788	459
Total outlay	*41,188*	*48,792*	*56,430*	*63,712*	*69,917*	*74,764*
Revenue—						
Taxation—						
Income tax on companies	5,258	5,107	4,940	6,034	6,702	8,065
Income tax on persons	21,224	22,967	24,710	29,300	32,734	36,740
Sales tax, Customs and Excise duties	11,004	12,399	14,294	16,507	18,273	19,296
Tax on Certain Bank Transactions	..	30	183	189	202	260
A.C.T. taxes and charges	74	92	105	125	150	172
Other taxes, fees, fines, etc	151	169	208	266	339	351
Total	37,711	40,764	44,438	52,421	58,399	64,885
Non-Taxation Revenue—						
Interest, rent, dividends, royalties, etc.	2,923	3,574	4,060	4,567	5,792	6,374
Miscellaneous income from Commonwealth enterprises	2	6	..	4	..	2
Total	2,925	3,580	4,060	4,571	5,792	6,376
Total revenues	*40,636*	*44,344*	*48,499*	*56,992*	*64,191*	*71,261*
Deficit	552	4,448	7,932	6,720	5,726	3,503

(*a*) Expenditure on new fixed assets *plus* increase in stocks *less* sales of previously rented houses. (*b*) The Commonwealth Non-Budget sector consists of enterprises which operate outside the Public Account. This includes both general government enterprises which largely depend on budget funding (e.g. ABC) and public trading enterprises which are largely self-financing (e.g. Telecom).

Financing of the Commonwealth Government deficit

The deficit shown in the last line of the preceding table represents the net excess of Budget outlay over revenue. In other words, the estimated deficit shown for 1986–87 represents the Commonwealth Government budget sector's 'financing requirements'. Most such transactions involve the issue, repurchase, redemption or acquisition of Commonwealth Government securities, but some involve or are represented by changes in other assets or liabilities of the Commonwealth Government.

Specifically the deficit is financed as follows:

Net sales of Commonwealth Government securities (new issues *less* redemptions *less* net purchases from Commonwealth Government balances in the Trust Fund);
less net purchases of other investments from Commonwealth Government balances in the Trust Fund
plus minor items of indebtedness (such as borrowing by Australian Capital Territory housing trust account)
less net additions to cash balances, and funds provided for the International Monetary Fund and the Australian Wheat Board.

A table summarising the financial transactions of the Commonwealth Government budget sector for recent years is given on page 378, Table 1 in 1986-87 *Budget Paper* No. 1.

Commonwealth non-budget enterprises

In addition to the group of Commonwealth Government enterprises whose transactions are covered by the Budget (i.e. itemised in the Consolidated Revenue Fund, the Loan Fund, or recorded in a Trust Fund), there are a number of organisations owned or controlled by the Commonwealth Government whose transactions do not, for the most part, pass through the

Public Account. This category includes public trading enterprises such as the Australian Postal Commission, Australian Telecommunications Commission, Overseas Telecommunications Commission, Qantas Airways Ltd, Australian National Airlines Commission, the Australian Shipping Commission, the Snowy Mountains Hydro-electric Authority, and public financial enterprises such as the Reserve Bank and the Commonwealth Banking Corporation. Public trading and financial enterprises, it should be noted, are bodies which aim at covering the bulk of their expenses by revenue either from sales of goods and services (trading enterprises), or by charges for services and net interest receipts (financial enterprises). As well as these enterprises, there are other government enterprises which record most of their transactions outside the Public Account but have only minor independent sources of revenue and are financed almost entirely from funds voted to them each year from the Consolidated Revenue Fund. In order that the national accounting presentation may indicate, as completely as possible, the direct effect of the Budget on demand, appropriations to this last group of enterprises are treated as final expenditure in the Budget. Enterprises in this category include the Australian Broadcasting Corporation, Australian National University, National Capital Development Commission, and the Australian Nuclear Science and Technology Organisation.

The transactions of Commonwealth Government bodies not covered by the Budget may be brought together and consolidated with the transactions recorded in the Budget to yield figures of the transactions of all Commonwealth public sector enterprises which are owned and/or controlled by the Commonwealth Government. The remaining tables in this section have been prepared on that basis.

Public financial enterprises have been omitted from the consolidated accounts presented here largely on the ground that combining the income and outlay and capital financing transactions of the Reserve Bank, the publicly owned trading and savings banks, government insurance offices and other public financial institutions with the equivalent transactions of public trading enterprises and general government enterprises seems to provide a less meaningful account of public sector activity. For example, omission of the borrowing and lending activities of the government banks and the Reserve Bank allows attention to be centred on the borrowing and lending activities of general government and public trading enterprises, which are quite different in nature and economic effect from the financing activities of the banking system.

Coverage—Northern Territory Government

On 1 July 1978 the Northern Territory became self-governing with expenditure responsibilities and revenue raising powers broadly approximating those of a State. In public finance statistics the Northern Territory Government is grouped with State and local governments from 1978–79 onwards. This results in a discontinuity in time series for the financial transactions of Commonwealth Government enterprises because:

- In the period up to and including 1977–78 Commonwealth spending on State-type services in the Northern Territory is included under the various Commonwealth outlay categories such as final consumption expenditure and gross capital formation. Similarly, State-type taxation and income from the Northern Territory public trading enterprises is included in the respective Commonwealth revenue categories.
- From 1978–79 onwards, Commonwealth spending in respect of the Northern Territory consists to a large extent of grants and advances to Northern Territory general government enterprises while State-type taxation and income from the Northern Territory public trading enterprises are no longer part of Commonwealth revenue.
- Not all State-type functions were fully transferred to the Northern Territory Government from 1 July 1978. Responsibility for health services was transferred on 1 January 1979 and responsibility for education services was transferred from 1 July 1979. The Commonwealth retains responsibility for certain State-type matters such as uranium mining and Aboriginal affairs (other than provision of services to Aboriginal communities).

Summary of outlay, revenue and net public sector borrowing requirement

The outlay and revenue, and net public sector borrowing requirement, of all non-financial enterprises of the Commonwealth Government for the six-year period ending 1985–86 are given in the following table.

OUTLAYS, REVENUE AND DEFICIT OF COMMONWEALTH GOVERNMENT
($ million)

	1980–81	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86p*
Current outlays	33,493	38,448	45,047	52,432	59,551	65,560
General government final consumption expenditure	7,269	8,538	9,843	11,344	12,806	14,461
Requited current transfer payments (*a*)	2,767	3,284	3,761	4,803	6,178	7,563
Unrequited current transfer payments	23,457	26,625	31,443,	36,285	40,567	43,537
Subsidies paid to enterprises	1,114	1,208	1,313	1,459	1,708	1,679
Personal benefit payments	11,083	12,875	15,664	18,383	20,660	22,355
Current grants	11,260	12,543	14,466	16,443	18,199	19,503
to non-profit institutions	377	474	597	703	858	910
to foreign governments and organisations	574	665	736	773	855	853
to the States and Northern Territory	10,295	11,384	13,108	14,935	16,429	17,645
to Local governments (direct)	15	19	24	32	57	95
Other current transfer payments	—	—	—	—	—	—
Capital outlays	4,397	5,113	6,006	6,957	7,339	8,222
Gross fixed capital expenditure	1,642	1,888	2,118	2,330	2,975	3,817
Expenditure on new fixed assets	1,761	1,926	2,132	2,299	3,185	4,111
Expenditure on secondhand fixed assets (net)	−119	−38	−14	31	−210	−293
Increase in stocks	113	274	294	216	−84	−6
Expenditure on Land and intangible assets (net)	−142	−13	−34	−51	−91	−101
Capital transfer payments	1,811	2,005	2,510	3,161	3,601	3,647
Capital grants	1,811	2,005	2,510	3,161	3,601	3,647
to the States and Northern Territory	1,666	1,770	2,216	2,773	3,147	3,241
to Local governments (direct)	7	7	20	21	19	16
to other sectors	138	227	274	367	435	390
Other capital transfer payments	—	—	—	—	—	—
Advances paid (net)	973	958	1,118	1,301	938	865
to the States, Northern Territory and Local governments	936	865	1,050	995	790	783
to other sectors	37	93	67	306	147	82
Revenue	35,593	41,520	44,977	49,580	58,676	65,768
Taxes, fees and fines	32,683	37,941	41,011	44,753	52,910	58,743
Income taxes levied on individuals	17,532	21,205	22,943	24,691	29,289	32,721
Income taxes levied on enterprises and non-residents	4,841	5,258	5,103	4,927	6,011	6,656
Other taxes, fees and fines	10,310	11,478	12,966	15,135	17,610	19,365
Net operating surpluses of public trading enterprises	769	1,060	915	1,439	1,881	1,983
Property income and other revenue	2,140	2,519	3,051	3,388	3,885	5,042
Financing transactions	2,298	2,040	6,076	9,810	8,214	8,015
Increase in provisions	819	881	1,074	1,381	1,061	1,346
Net public sector borrowing requirement	**1,479**	**1,160**	**5,001**	**8,429**	**7,153**	**6,668**

(*a*) Interest, land rent, royalties and dividends paid.

Grants and advances to the States and the Northern Territory

Commonwealth Government financial assistance to the States and the Northern Territory takes two main forms: (i) grants for general and specific purposes, and (ii) assistance for developmental and other specific purposes in the form of repayable advances. Some information about these forms of financial assistance is given below, but for more complete information reference should be made to the Commonwealth Government Budget Paper No. 7 *Payments to or for the States, the Northern Territory and Local Government Authorities*. Further information also appears in chapters of this *Year Book* dealing with the specific function which the payments are designed to serve.

Grants to the States and the Northern Territory

The following tables show details of grants to the States and the Northern Territory classified by purpose.

GRANTS TO STATES AND NORTHERN TERRITORY BY GOVERNMENT PURPOSE CLASSIFICATION AND STATE, 1985–86

($ million)

	N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*Total*
Current grants	*5,559.1*	*4,188.9*	*2,903.0*	*1,805.1*	*1,838.6*	*658.5*	*666.6*	*17,619.8*
General public services, defence, public order and safety	1.8	18.6	11.9	6.8	8.6	0.2	2.0	49.8
Education	1,174.9	1,022.9	525.7	310.4	324.6	92.4	22.9	3,473.8
Primary and secondary education	467.7	389.8	210.7	102.8	113.9	33.0	12.7	1,330.7
Tertiary education	702.3	627.0	310.8	203.1	205.2	58.6	9.8	2,116.8
University education	438.3	302.7	164.9	107.3	93.9	40.5	—	1,147.6
Other higher education	202.3	284.6	124.8	80.3	95.1	12.3	—	799.4
Technical and further education	61.7	39.7	21.1	15.5	16.1	5.8	9.8	169.8
Preschool education and education not definable by level	4.8	6.0	4.2	4.5	5.5	0.8	0.4	26.2
Preschool education	3.6	4.5	3.3	1.9	2.4	0.7	0.2	16.5
Other education not definable by level	1.3	1.5	0.8	2.6	3.0	0.1	0.2	9.7
Health	433.2	266.1	81.4	116.3	100.4	34.9	13.6	1,045.9
Hospitals and other institutional services and benefits	420.8	256.0	72.1	111.9	89.1	33.3	13.2	996.3
Clinic and other non-institutional services and benefits	3.7	4.9	1.9	1.7	1.5	1.0	0.2	14.8
Public Health	8.8	5.2	7.4	2.8	9.8	0.6	0.3	34.9
Social security and welfare	45.9	31.4	15.0	21.0	12.8	6.5	2.0	134.5
Social security	0.4	—	—	—	—	1.6	—	2.0
Welfare services	37.5	25.3	11.2	19.0	10.8	4.2	1.7	109.7
Family and child welfare	2.4	2.9	0.9	7.8	1.3	0.3	0.3	15.9
Aged and handicapped welfare	22.9	16.7	5.3	4.8	3.7	2.0	0.4	55.7
Welfare services n.e.c.	12.2	5.7	5.1	6.3	5.8	2.0	1.0	38.1
Social security and welfare n.e.c.	8.0	6.0	3.7	2.0	2.1	0.6	0.2	22.7
Housing and community amenities	1.8	1.3	0.4	1.3	1.9	2.3	4.4	13.6
Housing and community development	1.8	1.3	0.4	1.3	1.9	0.3	4.4	11.6
Housing	1.8	1.3	0.4	0.9	0.6	0.3	—	5.5
Community Development	—	—	—	0.4	1.2	—	4.4	6.1
Community amenities	—	—	—	—	—	2.0	—	2.0
Recreation and culture	—	—	—	—	1.8	—	—	1.8
Fuel and energy	14.0	—	3.1	—	0.7	0.1	44.0	61.9
Agriculture, forestry, fishing and hunting	9.3	12.2	22.4	7.6	10.6	0.4	9.9	72.3
Agriculture	9.3	12.2	22.4	7.6	10.6	0.4	9.9	72.3
Agricultural land management	6.5	7.3	16.7	2.8	3.3	0.2	9.7	46.5
Other agriculture	2.8	4.8	5.7	4.7	7.4	0.2	0.2	25.8
Transport and communications	—	—	0.7	—	—	0.2	—	1.0
Other transport and communications	—	—	0.7	—	—	0.2	—	1.0
Other economic affairs	90.8	68.5	42.1	22.7	23.2	7.4	2.3	256.9
Other purposes	3,787.5	2,768.1	2,200.3	1,318.9	1,354.1	514.1	565.4	12,508.4
General purpose inter-government transactions	3,787.5	2,768.1	2,194.1	1,318.9	1,354.1	514.1	565.2	12,502.0
Natural disaster relief	—	—	6.2	—	0.1	—	0.1	6.4

GRANTS TO STATES AND NORTHERN TERRITORY BY GOVERNMENT PURPOSE CLASSIFICATION AND STATE, 1985–86—*continued*

($ million)

	N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*Total*
Capital grants	*1,002.9*	*712.0*	*568.3*	*290.2*	*363.2*	*161.4*	*167.8*	*3,265.9*
Education	170.8	140.7	93.5	36.9	50.5	10.9	12.5	515.8
Primary and secondary education	74.2	54.4	43.7	17.6	22.2	6.1	4.6	222.8
Tertiary education	96.3	86.2	49.2	19.3	28.2	4.8	7.7	291.7
University education	32.2	21.1	9.9	6.0	6.7	3.4	—	79.1
Other higher education	18.8	24.4	10.7	4.4	5.4	0.6	—	64.3
Technical and further education	45.4	40.8	28.6	8.9	16.1	0.7	7.7	148.3
Preschool education and education not definable by level	0.2	—	0.6	0.1	0.1	—	0.3	1.3
Other education not definable by level	0.2	—	0.6	0.1	0.1	—	0.3	1.3
Health	17.1	13.0	8.2	4.3	4.6	2.2	0.5	50.0
Hospitals and other institutional services and benefits	16.8	12.7	7.7	4.2	4.3	2.2	0.5	48.3
Clinic and other non-institutional services and benefits	0.3	0.3	0.2	0.1	0.3	0.1	—	1.3
Public health	—	—	0.3	—	—	—	—	0.3
Social security and welfare	5.8	6.6	3.7	1.5	2.5	0.4	0.2	20.6
Welfare services	5.8	6.6	3.7	1.5	2.5	0.4	0.2	20.6
Family and child welfare	4.7	3.5	2.7	1.2	2.0	0.4	0.2	14.6
Aged and handicapped welfare	1.2	3.1	1.0	0.4	0.4	—	—	6.0
Welfare services n.e.c.	—	—	—	—	—	—	—	—
Housing and community amenities	211.2	147.7	88.1	72.7	64.5	26.7	31.7	642.8
Housing and community development	204.1	146.3	86.6	70.0	64.2	26.6	29.6	627.4
Housing	200.0	146.3	85.9	69.9	60.2	26.6	29.6	618.5
Community development	4.1	—	0.7	0.1	4.0	—	—	8.9
Community amenities	7.2	1.4	1.4	2.7	0.4	0.2	2.1	15.5
Recreation and culture	9.1	6.1	3.8	2.3	18.8	1.2	0.2	41.5
Fuel and energy	—	—	—	—	—	25.3	19.4	44.7
Agriculture, forestry, fishing and hunting	3.6	4.3	32.2	1.4	2.6	0.2	1.5	45.7
Agriculture	3.6	4.3	31.1	1.4	2.6	0.2	1.5	44.6
Agricultural water resources management	3.6	4.0	31.1	1.4	2.5	0.2	1.5	44.3
Other agriculture	—	0.3	—	—	—	—	—	0.3
Forestry, fishing and hunting	—	—	1.1	—	—	—	—	1.1
Transport and communications	402.4	253.9	257.7	97.3	167.9	47.2	40.5	1,266.9
Road transport	396.4	253.9	257.6	97.3	158.1	47.1	40.5	1,251.0
Water transport	6.0	—	—	—	—	—	—	6.0
Other transport and communications	—	—	0.1	—	9.8	0.1	—	9.9
Other economic affairs	2.1	—	—	0.8	—	—	—	2.9
Other purposes	180.8	139.9	81.2	72.8	51.9	47.4	61.2	635.0
General purpose inter-government transactions	180.4	140.2	74.0	72.7	51.6	47.4	61.2	627.4
Natural disaster relief	0.4	−0.3	7.2	—	0.3	—	—	7.6
Total current and capital grants	**6,562.1**	**4,901.0**	**3,471.3**	**2,095.3**	**2,201.9**	**819.9**	**834.4**	**20,885.7**

Advances to the States and the Northern Territory

The Commonwealth is also providing financial assistance for State projects by way of repayable advances. Borrowings of the Loan Council which are advanced to the States for their work programs and advances for State housing projects represent the largest proportion of the total funds advanced. Full descriptions of the various programs for which funds have been advanced in recent years are given in *Payments to or for the States, the Northern Territory and Local Government Authorities.*

The following table shows figures of net advances to the States and Northern Territory by purpose.

NET ADVANCES TO STATES AND THE NORTHERN TERRITORY BY GOVERNMENT PURPOSE CLASSIFICATION, 1985–86

($ million)

	N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*Total*
Net advances	*216.8*	*175.6*	*95.8*	*87.7*	*51.8*	*53.2*	*102.5*	*783.4*
Defence	3.4	−0.1	−0.3	—	—	—	—	3.0
Social Security and Welfare	—	—	—	—	—	—	—	—
Housing and community amenities	53.9	58.0	35.3	127.1	81.2	18.5	31.9	406.1
Housing and community development	54.4	58.5	35.5	123.4	81.5	18.6	32.0	403.9
Housing	48.5	61.7	35.5	123.4	88.5	18.6	32.0	408.2
Community development	5.9	−3.2	—	—	−7.0	—	—	−4.3
Water supply	—	—	—	3.8	−0.1	—	—	3.7
Sanitation and protection of the environment	−0.5	−0.4	−0.1	−0.1	−0.2	—	−0.1	−1.5
Recreation and Culture	—	—	—	—	−0.2	—	—	−0.2
Fuel and energy	−1.6	—	−3.2	—	—	—	−1.9	−6.7
Agriculture, forestry, fishing and hunting	−4.1	−4.6	−3.1	−11.6	−1.2	−0.5	0.8	−24.3
Agriculture	−3.6	−4.4	−2.7	−0.5	−1.0	−0.3	0.8	−11.7
Agricultural land management	0.8	—	−0.7	—	—	—	0.9	1.0
Agricultural water resources management	−1.9	−0.5	—	−0.3	−0.2	—	—	−2.9
Agriculture support schemes	−1.7	−3.9	−2.6	−0.4	−0.8	−0.3	—	−9.8
Other agriculture	−0.8	—	0.6	0.2	—	—	—	—
Forestry, fishing and hunting	−0.5	−0.2	−0.4	−11.1	−0.2	−0.2	—	−12.6
Mining, manufacturing and construction	—	—	—	—	—	—	—	—
Manufacturing	—	—	—	—	—	—	—	—
Transport and communications	−1.6	−0.8	−0.8	—	−3.3	—	—	−6.5
Water transport	—	—	−0.1	—	—	—	—	−0.2
Rail transport	−1.6	−0.8	−0.7	—	−3.3	—	—	−6.4
Other purposes	166.8	123.1	67.8	−27.8	−24.8	35.3	71.8	412.1
Public debt transactions	—	—	—	—	—	—	−5.4	−5.4
General purpose inter-government transactions	174.3	126.9	66.4	−22.8	−18.3	35.6	77.2	439.4
Natural disaster relief	−7.5	−3.8	1.3	−5.0	−6.5	−0.4	—	−21.9

Minus sign (−) denotes excess of repayments.

Main sources of finance

The main sources of Commonwealth Government finance are taxation, income of public trading and financial enterprises, other factor income transfers, borrowing, and other financing transactions. Taxation constitutes by far the major source of revenue. In recent years, however, borrowing has become an increasingly significant source of funds.

In what follows, an account is given of the system of Commonwealth Government taxation, and some details are given of the current operations of Commonwealth public enterprises. Borrowings and other financing activities of Commonwealth enterprises are dealt with for convenience in a later section relating to the debt of all public sector enterprises.

Commonwealth Government taxation—summary

The following table shows Commonwealth Government taxation revenue classified by type of tax for the six years ending 1985–86.

COMMONWEALTH GOVERNMENT—TAXES, FEES AND FINES BY TYPE

($ million)

Type of tax	*1980–81*	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*
Taxes, fees and fines	32,683.0	37,941.0	41,010.9	44,753.0	52,890.5	58,690.5
Taxes on income	22,373.1	26,462.7	28,045.3	29,618.0	35,300.7	39,352.4
Income taxes levied on individuals	17,532.4	21,205.0	22,942.6	24,691.5	29,288.6	32,713.8
Personal income tax	17,532.1	21,204.5	22,941.6	24,690.5	29,287.4	32,712.5
Mining withholding tax	0.3	0.5	1.0	0.9	1.2	1.2
Income taxes levied on enterprises	4,564.0	4,903.1	4,688.8	4,460.3	5,414.3	5,928.0
Company income tax (*a*)	4,552.8	4,883.3	4,663.6	4,439.2	5,400.2	5,906.1
Income tax paid by superannuation funds	11.1	19.8	25.2	21.2	14.2	22.0
Income taxes levied on non-residents	276.7	354.6	414.0	466.2	597.7	710.6
Dividend withholding tax	114.1	125.6	133.8	129.6	154.8	209.3
Interest withholding tax	46.6	79.0	124.1	174.7	247.9	351.3
Other income tax levied on non-residents	116.0	150.0	156.0	162.0	195.0	150.0
Employers' payroll taxes	36.5	37.6	38.8	43.1	55.8	60.6
General taxes (payroll tax)	17.0	19.3	21.4	23.8	28.8	33.9
Selective taxes (stevedoring industry charges)	19.5	18.2	17.5	19.3	26.9	26.8
Taxes on property	43.4	33.9	67.6	227.9	239.6	267.7
Taxes on immovable property	19.2	20.9	24.5	24.5	28.1	38.2
Estate, inheritance and gift duties	17.0	4.4	1.6	3.5	0.7	0.4
Taxes on financial and capital transactions	7.1	8.6	41.5	200.0	210.8	229.1
Stamp duties	7.1	8.6	11.9	17.3	21.4	27.0
Financial institutions' transaction taxes	—	—	29.6	182.7	189.5	202.1
Taxes on provision of goods and services	10,115.7	11,243.8	12,672.3	14,656.5	17,031.3	18,705.2
General taxes (sales tax)	2,102.3	2,854.2	3,490.1	4,164.8	4,966.1	5,728.3
Excises	6,094.3	6,226.4	7,067.5	8,084.2	9,056.1	9,604.6
Excises on crude oil and LPG	3,107.9	3,163.3	3,486.0	3,664.5	4,241.8	4,065.8
Other Excise Act duties	2,726.1	2,830.5	3,320.1	4,081.7	4,351.6	5,186.1
Agricultural production taxes	260.2	232.6	261.4	338.0	462.7	352.7
Taxes on international trade	1,916.4	2,158.2	2,104.3	2,397.9	2,995.4	3,357.9
Customs duties on imports	1,799.5	2,059.7	2,035.6	2,329.0	2,926.6	3,281.9
Customs duties on exports	84.9	96.9	66.6	66.6	60.3	57.7
Agricultural produce export taxes	32.0	1.6	2.1	2.3	8.6	18.3
Taxes on gambling	1.5	2.8	7.3	6.1	9.0	8.8
Taxes on insurance	1.3	2.2	3.1	3.6	4.7	5.6
Taxes on use of goods and performance of activities	51.5	82.5	100.6	113.9	131.7	146.9
Motor vehicle taxes	7.8	10.6	13.6	16.7	19.3	21.2
Franchise taxes	3.0	3.5	3.5	4.3	5.0	5.5
Other taxes on use of goods etc.	40.7	68.4	83.4	92.9	107.4	120.2
Broadcast and TV station licences	21.5	30.9	40.4	48.4	58.8	68.8
Departure tax	18.7	36.1	41.7	43.2	46.9	50.1
Other taxes on use of goods etc. n.e.i.	0.5	1.4	1.3	1.3	1.7	1.2
Fees and fines	63.0	80.6	86.3	93.5	131.5	157.7
Fees from regulatory services	58.8	72.8	78.4	83.9	123.6	150.3
Fines	4.2	7.8	7.9	9.6	7.9	7.4
Taxes paid by public trading enterprises	25.9	19.4	29.1	27.0	26.1	48.2

(*a*) Excludes income taxes paid by public trading enterprises.

Taxes on income

A description of the development of income taxes in Australia appeared in *Year Book* No. 35, page 926. With the advent of Uniform Taxation in 1942, the States withdrew from the income tax field. While the Commonwealth remains the sole government imposing taxes on income, tax sharing arrangements have been made under which State and local government bodies receive a share of Commonwealth revenue.

The laws dealing with the assessment, declaration and imposition of income tax at 30 June 1987 were:

- *Income Tax Assessment Act 1936* (later referred to as 'the Assessment Act')
- *Income Tax Rates Act 1986* (as amended by the *Income Tax Rates Amendment Act 1987*)
- *Income Tax Act 1986*
- *Income Tax (Dividends and Interest Withholding Tax) Act 1974*
- *Income Tax (Drought Bonds) Act 1969*
- *Income Tax (Withholding Tax Recoupment) Act 1971*
- *Income Tax (Bearer Debentures) Act 1971*
- *Income Tax (Film Royalties) Act 1977*
- *Income Tax (Non-Resident Companies) Act 1978*
- *Income Tax (Mining Withholding Tax) Act 1979*
- *Income Tax (Diverted Income) Act 1981*
- *Income Tax (Securities and Agreements) (Withholding Tax Recoupment) Act 1986*

Both individuals and companies are liable for income tax. Private companies were subject to tax on certain undistributed income in addition to the primary income tax levied on all companies. Subject to phasing-out arrangements, however, this additional tax generally does not apply in relation to profits of the 1986–87 and latter income years.

The operation of the Assessment Act is affected by other Acts, the more important of which are:

(a) *Taxation Administration Act 1953*, which provides for the administration of certain Acts relating to taxation and the screening for taxation purposes of applications for exchange control approval.

(b) *Income Tax (International Agreements) Act 1953*, which gives the force of law to agreements with other countries for the avoidance of double taxation. Australia has concluded comprehensive agreements for the avoidance of double taxation with the United Kingdom, the United States of America, Canada, New Zealand, Singapore, Japan, the Federal Republic of Germany, the Netherlands, France, Belgium, the Philippines, Switzerland, Malaysia, Sweden, Denmark, Ireland, Norway, the Republic of Korea, Malta, Italy and Finland. In addition, as at 30 June 1985, a comprehensive agreement with Austria had been signed but had not entered into force. Limited agreements dealing with airline profits have been concluded with France, Italy, Greece and India.

(c) Taxation (Unpaid Company Tax) Assessment Act and related legislation.

(d) *The States (Tax Sharing and Health Grants) Act 1981*, which provides for the States and Northern Territory to receive a proportion of total Commonwealth tax collections.

(e) *Income Tax (Arrangements with the States) Act 1978*, which enables each State to increase or reduce personal income tax levied on residents of the State.

(f) *International Organizations (Privileges and Immunities) Act 1963*, and Regulations made under that Act, which provide for the exemption from income tax of certain income of international organisations and their officials.

(g) *Diplomatic Privileges and Immunities Act 1967*, which provides for the exemption from income tax of certain income of diplomatic representatives, their staff and families.

(h) *Consular Privileges and Immunities Act 1972*, which provides for the exemption from tax of certain income of consular representatives, their staff and families.

(i) *The Loan (Income Equalization Deposits) Act 1976*, which provides for the making of interest bearing income equalization deposits by primary producers with the Commissioner of Taxation.

(j) *Taxation (Interest on Overpayments) Act 1983*, which provides for the payment of interest on certain refunds of tax.

(k) *Taxation (Interest on Underpayments) Act 1986*, which imposes an interest charge in respect of underpayment of income tax.
(l) *Loan (Drought Bonds) Act 1969*, which authorizes the issue of drought bonds and empowers the Commissioner of Taxation to declare when drought bonds have become redeemable.
(m) *Banking Act 1959* and Regulations, under which certain exchange control applications are screened to prevent avoidance and evasion of Australian taxes.
(n) *The Crimes (Taxation Offences) Act 1980*, which established a number of criminal offences relating to the fraudulent evasion of income tax (and sales tax) by stripping companies or trusts of their capacity to pay.
(o) *Medicare Levy Act 1986*, which imposes medicare levy on certain individuals subject to assessment of the levy in accordance with the Assessment Act.
(p) *Local Government (Personal Income Tax Sharing) Act 1976*, which provides for local government bodies in the States to receive a specified proportion of net personal income tax collections.

More detailed information on taxation can be obtained from the Australian Taxation Office's reports and papers.

COMMONWEALTH INCOME TAX PAYABLE ON SPECIFIED RESIDENT INDIVIDUAL INCOMES

($)

Taxable income (a)	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*	*1986–87*
TAXPAYER WITH NO DEPENDANTS						
3,000	..	..	..	..	..	..
5,000	257.60	165.00	121.50	108.01	101.25	26.86
7,000	897.60	778.40	721.50	641.41	601.25	515.26
10,000	1,857.60	1,698.50	1,621.50	1,441.50	1,351.25	1,247.86
15,000	3,457.60	3,232.00	3,121.50	2,858.26	2,726.25	2,590.94
20,000	5,352.44	4,916.99	4,701.50	4,438.26	4,306.25	4,136.09
TAXPAYER WITH DEPENDENT WIFE						
3,000	..	..	..	..	..	..
5,000	..	..	..	..	..	..
7,000	67.60	..	..	..	..	..
10,000	1,027.69	868.50	791.50	611.51	521.25	417.86
15,000	2,627.60	2,402.00	2,291.50	2,028.26	1,896.25	1,760.94
20,000	4,522.44	4,086.99	3,871.50	3,608.26	3,476.25	3,306.09

(*a*) Income remaining after allowing all deductions.

Income tax assessments—individuals

The following tables show the number of taxpayers, taxable income, and net income tax assessed for individuals.

COMMONWEALTH INCOME TAX ASSESSMENTS (*a*): TAXABLE INDIVIDUALS BY GRADE OF TAXABLE INCOME

(Income derived in the year 1984–85)

Grade of taxable income	*Number of taxpayers*			*Net income(b)*	*Taxable income(c)*	*Net tax*
	Males	*Females*	*Total*			
$ $				$'000	$'000	$'000
Under 4,000	18,948	14,011	32,959	82,428	74,280	11,349
4,000– 4,999	33,200	52,286	85,486	429,633	411,124	6,031
	52,148	*66,297*	*118,445*	*512,061*	*485,404*	*17,380*
5,000– 5,999	119,237	182,116	301,353	1,730,102	1,674,621	63,459
	171,385	*248,413*	*419,798*	*2,242,163*	*2,160,025*	*80,839*

COMMONWEALTH INCOME TAX ASSESSMENTS (*a*): TAXABLE INDIVIDUALS BY GRADE OF TAXABLE INCOME—*continued*

(Income derived in the year 1984–85)

Grade of taxable income	*Number of taxpayers* *Males*	*Females*	*Total*	*Net income(b)*	*Taxable income(c)*	*Net tax*
$ $				$'000	$'000	$'000
6,000– 6,999	139,015	204,391	343,406	2,294,038	2,226,146	155,977
	310,400	*452,804*	*763,204*	*4,536,200*	*4,386,171*	*236,816*
7,000– 7,999	127,027	168,092	295,119	2,287,480	2,212,905	228,661
	437,427	*620,896*	*1,058,323*	*6,823,681*	*6,599,076*	*465,478*
8,000– 8,999	124,158	155,334	279,492	2,454,940	2,373,885	287,319
	561,585	*776,230*	*1,337,815*	*9,278,621*	*8,972,961*	*752,796*
9,000– 9,999	120,564	145,962	266,526	2,617,290	2,531,153	343,217
	682,149	*922,192*	*1,604,341*	*11,895,911*	*11,504,114*	*1,096,014*
10,000–10,999	122,432	140,614	263,046	2,855,485	2,760,858	409,315
	804,581	*1,062,806*	*1,867,387*	*14,751,395*	*14,264,972*	*1,505,329*
11,000–11,999	123,672	138,871	262,543	3,124,332	3,020,227	479,761
	928,253	*1,201,677*	*2,129,930*	*17,875,727*	*17,285,200*	*1,985,090*
12,000–12,999	131,571	143,976	275,547	3,563,072	3,445,389	580,276
	1,059,824	*1,345,653*	*2,405,477*	*21,438,800*	*20,730,589*	*2,565,366*
13,000–13,999	146,654	152,167	298,821	4,171,169	4,036,283	718,064
	1,206,478	*1,497,820*	*2,704,298*	*25,609,969*	*24,766,871*	*3,283,430*
14,000–14,999	167,159	160,973	328,132	4,910,268	4,758,650	886,046
	1,373,637	*1,658,793*	*3,032,430*	*30,520,236*	*29,525,521*	*4,169,476*
15,000–15,999	181,969	147,812	329,781	5,272,999	5,110,649	985,755
	1,555,606	*1,806,605*	*3,362,211*	*35,793,236*	*34,636,170*	*5,155,231*
16,000–16,999	188,636	130,304	318,940	5,433,989	5,261,028	1,045,634
	1,744,242	*1,936,909*	*3,681,151*	*41,227,225*	*39,897,198*	*6,200,865*
17,000–17,999	195,570	111,551	307,121	5,554,010	5,373,432	1,095,580
	1,939,812	*2,048,460*	*3,988,272*	*46,781,235*	*45,270,630*	*7,296,444*
18,000–18,999	196,560	92,953	289,513	5,537,431	5,354,367	1,116,283
	2,136,372	*2,141,413*	*4,277,785*	*52,318,666*	*50,624,997*	*8,412,727*
19,000–19,999	191,530	84,245	275,775	5,554,605	5,374,132	1,150,790
	2,327,902	*2,225,658*	*4,553,560*	*57,873,271*	*55,999,128*	*9,563,517*
20,000–21,999	321,698	113,150	434,848	9,430,304	9,112,349	2,080,298
	2,649,600	*2,338,808*	*4,988,408*	*67,303,575*	*65,111,477*	*11,643,815*
22,000–23999	265,457	82,456	347,913	8,273,550	7,990,886	1,977,901
	2,915,057	*2,421,264*	*5,336,321*	*75,577,125*	*73,102,363*	*13,621,715*
24,000–25,999	217,302	58,410	275,712	7,124,156	6,882,240	1,816,130
	3,132,359	*2,479,674*	*5,612,033*	*82,701,281*	*79,984,603*	*15,437,845*
26,000–27,999	180,728	42,304	223,032	6,223,817	6,012,593	1,671,885
	3,313,087	*2,521,978*	*5,835,065*	*88,925,098*	*85,997,196*	*17,109,731*
28,000–29,999	139,144	27,211	166,355	4,985,794	4,815,233	1,398,951
	3,452,231	*2,549,189*	*6,001,420*	*93,910,893*	*90,812,429*	*18,508,682*
30,000–34,999	220,894	36,757	257,651	8,603,956	8,305,060	2,566,540
	3,673,125	*2,585,946*	*6,259,071*	*102,514,849*	*99,117,489*	*21,075,222*
35,000–39,999	112,769	20,849	133,618	5,140,344	4,954,751	1,666,237
	3,785,894	*2,606,795*	*6,392,689*	*107,655,192*	*104,072,240*	*22,741,459*
40,000–49,999	78,485	11,456	89,941	4,126,166	3,957,137	1,488,513
	3,864,379	*2,618,251*	*6,482,630*	*111,781,358*	*108,029,378*	*24,229,972*
50,000–99,999	47,877	8,718	56,595	3,739,696	3,573,231	1,577,956
	3,912,256	*2,626,969*	*6,539,225*	*115,521,054*	*111,602,609*	*25,807,928*
100,000 and over	5,893	1,426	7,319	1,197,939	1,148,136	612,466
Total	**3,918,149**	**2,628,395**	**6,546,544**	**116,718,993**	**112,750,745**	**26,420,394**

(*a*) Assessments in respect of 1984–85 income year issued during the period 1 July 1985 to 30 June 1986. (*b*) Net income is total assessable income less total deductions for expenses incurred in gaining assessable income (*c*) Taxable income is the income remaining after deducting from assessable income all allowable deductions.

The previous table excludes details of assessments raised to trustees. However, the following table includes all 1984–85 income year assessments issued during the period 1 July 1985 to 30 June 1986.

COMMONWEALTH INCOME TAX ASSESSMENTS: TAXABLE INDIVIDUALS BY STATE OR TERRITORY OF RESIDENCE

(Income derived in the year 1984–85)

State	*Number*	*Taxable income*	*Net tax*
		$'000	$'000
New South Wales	2,168,627	38,132,320	9,160,329
Victoria	1,843,861	31,839,000	7,563,347
Queensland	967,585	15,976,070	3,593,567
Western Australia	603,903	10,343,941	2,400,668
South Australia	594,712	9,730,059	2,206,091
Tasmania	181,566	3,012,884	682,726
Northern Territory	50,827	1,005,749	234,362
Australian Capital Territory	170,712	3,270,411	830,944
Australia	**6,581,793**	**113,310,434**	**26,672,035**

Yield of income taxes

Income taxes collected

The following table shows the net amounts of taxes collected and the proportions of the several components over recent years.

COMMONWEALTH INCOME TAXES COLLECTED

Source of income tax	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*	*1986–87*
NET AMOUNTS COLLECTED ($'000)						
Individuals—						
Instalments—salaries and wages	17,417,317	18,840,314	19,940,085	23,424,083	26,324,401	29,526,429
Other payments	3,806,998	4,126,459	4,521,096	5,465,869	5,895,139	7,781,993
Companies	5,052,697	4,828,547	4,563,382	5,564,476	6,111,311	6,714,103
Withholding tax	205,098	258,985	305,168	403,912	561,815	639,075
Prescribed payments system	..	..	250,513	411,640	514,884	765,359
Fringe benefits tax	..	..	..	..	..	534,859
Total	**26,482,110**	**28,054,305**	**29,580,245**	**35,269,980**	**39,407,550**	**45,961,818**
PERCENTAGES						
Individuals—						
Instalments—salaries and wages	65.77	67.16	67.41	66.41	66.80	64.24
Other payments	14.38	14.71	15.28	15.50	14.96	16.93
Companies	19.08	17.20	15.43	15.78	15.51	14.61
Withholding tax	0.77	0.92	1.03	1.14	1.42	1.39
Prescribed payments system	..	..	0.85	1.17	1.31	1.67
Fringe benefits tax	..	..	..	..	..	1.16
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

State governments

The State government enterprises dealt with in this section include the central government of each State, statutory bodies created by or under State legislation to carry out activities on behalf of the central government, and incorporated organisations in which individual State governments have a controlling interest.

The transactions of many of the State government enterprises are itemised in State Consolidated Revenue Funds or in Trust Funds, so that a satisfactory coverage of their transactions can be obtained from a detailed analysis and reclassification of the published accounts whose receipts and payments are summarised in the Statement of Treasury balances for each State. The remaining statutory bodies and other publicly owned or controlled organisations maintain accounts entirely, or largely, separate from the public accounts, although there may be transactions between them and State governments (such as advances and capital contributions, interest and dividends, and votes for running expenses and capital works) which would affect the public accounts. The accounting reports of this group of organisations have to be collected and analysed in order to present a complete statement of the transactions of State government enterprises—or at least methods of analysis need to be adopted which adequately reflect their transactions so that they are in principal, covered by the statistics.

In the figures which follow in this section, all expenditure by State central government enterprises on certain institutions, whether direct (e.g. new building charged to Loan Fund) or indirect by way of current or capital grants to the bodies administering them, has been treated as final expenditure on goods and services by State government; fees and gifts from persons or private businesses to these institutions are not included, nor is the expenditure of the institutions from their own resources. Universities and hospitals are particular examples of organisations for which this practice has been adopted.

Many of these State government enterprises have been granted autonomy by State legislatures to the extent that they are largely financially independent. Some of these are funded from earmarked tax revenues and are vested with independent borrowing powers. A considerable number of others belong to the category of public trading enterprises, since they are able to charge for their services so as to cover their costs of operation. These bodies have usually been created to control a specific activity or provide a specific service within a State. It is often the case that in other States similar activities are carried out, or services are provided, by central government or local governments. Details of the activities of autonomous or semi-autonomous State government enterprises engaged in such fields as construction and maintenance of roads and bridges, provision of water supply and sewerage services, harbour facilities, transport, electricity and gas, housing and banking may be found in chapters relevant to those subjects and in State *Year Books*.

Details of the transactions of State governments are given in the tables which follow and in *State and Local Government Finance, Australia* (5504.0). Additional information relating to the activities of the State governments may also be found in the *Year Books* of the individual States.

Outlay, revenue, grants received, and deficit

The outlay, revenue, grants received and deficit of State governments for the six year period ended 1985–86 are given in the following table.

OUTLAYS, REVENUE AND GRANTS RECEIVED, AND DEFICIT OF STATE GOVERNMENTS

($ million)

	1980–81	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*
Current outlays	18,579	21,460	25,137	28,293	31,850	35,607
General government final consumption expenditure	13,027	14,820	16,662	18,543	20,740	22,951
Requited current transfer payments	2,766	3,372	4,362	5,053	5,962	7,060
Unrequited current transfer payments	2,787	3,268	4,112	4,698	5,148	5,596
Subsidies paid to enterprises	1,060	1,302	1,710	1,814	1,935	2,197
Personal benefit payments	398	433	561	591	643	676
Current grants	1,315	1,521	1,824	2,276	2,553	2,717
to non-profit institutions	869	1,026	1,237	1,529	1,697	1,853
to Local governments	446	494	587	747	856	864
Other current transfer payments	14	13	17	16	16	7
Capital outlays	6,719	8,108	9,818	10,419	10,376	11,645
Gross fixed capital expenditure	6,048	7,387	8,797	9,393	9,418	10,492
Expenditure on new fixed assets	6,085	7,421	8,804	9,451	9,536	10,635
Expenditure on second hand fixed assets (net)	−37	−34	−7	−58	−118	−144
Increase in stocks	110	129	178	69	−10	112
Expenditure on Land and intangible assets (net)	47	66	43	63	121	−44

OUTLAYS, REVENUE AND GRANTS RECEIVED, AND DEFICIT OF STATE GOVERNMENTS—*continued*

($ million)

	1980–81	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*
Capital transfer payments	342	392	438	581	626	573
Capital grants	342	392	438	581	626	573
to Local governments	275	302	336	440	460	419
to other sectors	67	90	101	141	166	154
Other capital transfer payments	—	—	—	42	37	16
Advances paid (net)	171	135	363	314	221	512
to Local governments	16	20	22	12	24	28
to other sectors	155	115	341	302	197	484
Revenue and grants received	21,212	23,990	28,183	31,905	35,904	39,449
Taxes, fees and fines	6,133	7,223	8,355	9,286	10,426	11,497
Net operating surpluses of public trading enterprises	1,487	1,698	2,400	2,639	3,141	3,612
Property income and other revenue	1,534	1,812	2,005	2,263	2,728	3,456
Grants received from Commonwealth government	12,058	13,257	15,423	17,717	19,609	20,884
Financing transactions	4,086	5,578	6,772	6,808	6,322	7,603
Increase in provisions	674	864	1,026	1,490	1,726	1,879
Deficit	**3,412**	**4,714**	**5,746**	**5,318**	**4,596**	**5,724**
Deficit financing						
Net advances received from Commonwealth Government (ETF 41)	910	862	1,044	1,001	840	808
Other deficit financing	2,502	3,852	4,702	4,317	3,756	4,916

For more recent information on State government finance statistics, reference should be made to the publications listed in the bibliography at the end of this chapter.

Local governments

In each State of Australia and in the Northern Territory there exists a system of local government whose powers and responsibilities are generally similar and cover such matters as the construction and maintenance of roads, streets and bridges; water, sewerage and drainage systems; health and sanitary services; the supervision of building; and the administration of regulations relating to items such as weights and measures, slaughtering, the registration of dogs, etc. In addition to these obligatory functions, there are also many which may be performed by a local authority either with or without the consent of the ratepayers or the Governor-in-Council. These include transport facilities, electricity, gas and other business undertakings, hospitals, charitable institutions, recreation grounds, parks, swimming pools, libraries, museums, etc.

The system is based on the principle of a grant of specific powers by the State and Northern Territory legislatures to the local government bodies, their autonomy, however, being more or less limited by the provision for general supervision by a department of the central government or by the Governor-in-Council. Otherwise, within the scope of the Acts under which they are constituted or which they have to administer, they are responsible only to the ratepayers. While the broad pattern of local government throughout the States of Australia is similar, the range of activities, election of officers, methods of valuation and rating powers, etc. vary considerably from State to State, and even within States.

The areas over which local government bodies, numbering almost 900, exercise general control, are known in New South Wales as cities, municipalities and shires; in Victoria as cities, towns, boroughs and shires; in Queensland as cities, towns and shires; South Australia as cities, corporate towns and district council areas; in Western Australia as cities, towns and shires and in Tasmania and the Northern Territory as cities and municipalities. In New South Wales some local authorities in an area have combined to form County Councils which provide services such as electricity and water supply. Within shires there are also some municipal units known as urban areas. Apart from the Australian Capital Territory and the more sparsely populated parts of New South Wales, South Australia and the Northern Territory, practically the whole of Australia comes within local government jurisdiction. For further details *see* State *Year Books*.

Area, population, dwellings, and rates and penalties for ordinary services

The area, population, dwellings, and the amount of rates and penalties collected for ordinary services in the incorporated areas of each State are shown in the following table. Particulars of dwellings are in accordance with the definition used in the Census, and are compiled from information collected on the Census Schedules. In the table, where the boundary of a capital city statistical division cuts across a local government area, the area of that capital city statistical division has been estimated. Particulars of population for capital city statistical divisions take account of those local government areas which overlap with capital city statistical division boundaries.

The item 'Rates and Penalties for Ordinary Services' relates to general and other special or local rates (excluding water and sewerage rates) levied or declared or, where the cash accounting system operates, the rates collected.

LOCAL GOVERNMENT: AREA, POPULATION, DWELLINGS, AND RATES AND PENALTIES FOR ORDINARY SERVICES—30 JUNE 1985

Location(a)	*No. of local authorities*	*Area(a)*	*Population*	*Dwellings*	*Rates and penalties—ordinary services*
		square kilometres	'000	'000	$'000
New South Wales(*b*)—					
Sydney Statistical Division	43	12,407	3,392	(*c*)1,150	584,737
Other	132	693,255	2,081	(*c*)672	361,430
Total New South Wales	*175*	*705,662*	*5,473*	*(c)1,822*	*946,167*
Victoria(*d*)—					
Melbourne Statistical Division(*e*)	56	7,359	2,938	(*f*)965	506,702
Other	155	219,741	1,185	(*f*)403	206,405
Total Victoria	*211*	*227,100*	*4,123*	*(f)1,368*	*713,107*
Queensland—					
Brisbane Statistical Division	10	3,080	1,158	(*g*)415	(*h*)171,866
Other	129	1,723,920	1,390	(*g*)428	199,314
Total Queensland	*139*	*1,727,000*	*2,548*	(*g*)843	371,180
South Australia—					
Adelaide Statistical Division(*i*)	30	1,893	(*j*)986	(*j*)373	131,120
Other	95	151,994	(*j*)365	(*j*)143	55,969
Total South Australia	*125*	*153,887*	*(j)1,351*	*(j)516*	*187,089*
Western Australia—					
Perth Statistical Division	26	(*k*)5,363	(*l*)994	(*l*)372	127,158
Other	113	(*k*)2,520,137	(*l*)412	(*l*)142	61,144
Total Western Australia	*139*	*(k)2,525,500*	*(l)1,407*	*(l)514*	*188,302*
Tasmania—					
Hobart Statistical Division(*m*)	7	3,345	185	(*n*)66	28,270
Other	42	64,988	257	(*n*)93	34,136
Total Tasmania	*49*	*68,333*	*442*	*(n)159*	*62,406*
Northern Territory—					
Darwin Statistical Division	1	114	66	(*n*)25	8,850
Other	3	209	47	(*n*)14	5,376
Total Northern Territory	*4*	*323*	*113*	*(n)39*	*14,226*

(*a*) Unincorporated areas are excluded in all States. (*b*) Based on year ended 31 December 1983. (*c*) Figures as at 30 June 1981 (Census data). (*d*) Based on year ended 30 September 1983. (*e*) Includes all of Cranbourne (S), Healesville (S) and Pakenham (S) even though parts are outside the Melbourne Statistical Division. (*f*) Figures as at 30 June 1981 (Census data) (*g*) Figures as at 30 June 1986 (Census data). (*h*) Includes the Moreton Statistical Division component for five local authorities. (*i*) Excludes Gumeracha (DC) and Onkaparinga (DC) but includes the part of Willunga (DC) which is included in the Outer Adelaide Statistical Division. (*j*) Figures as at 30 June 1986 (Census data). (*k*) Figures as at 30 June 1981. (*l*) Figures as at 30 June 1986 (Census data). (*m*) Includes all of Brighton (M), Kingsborough (M), New Norfolk (M) and Sorell (M) even though parts are outside the Hobart Statistical Division. (*n*) Figures as at 30 June 1986 (Census data).

OUTLAYS, REVENUE AND GRANTS RECEIVED AND DEFICIT OF LOCAL GOVERNMENTS

($ million)

	1980–81	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*
Current outlays	1,804	2,090	2,526	2,814	3,107	3,406
General government final consumption expenditure	1,362	1,570	1,889	2,090	2,308	2,533
Requited current transfer payments	371	438	535	609	677	737
Unrequited current transfer payments	72	82	102	115	122	136
Capital outlays	1,385	1,643	1,662	1,714	2,016	2,215
Gross fixed capital expenditure	1,367	1,610	1,635	1,727	2,020	2,231
Expenditure on new fixed assets	1,409	1,617	1,687	1,775	2,091	2,315
Expenditure on secondhand fixed assets (net)	−42	−7	−52	−48	−71	−85
Increase in stocks	18	20	16	−10	−9	10
Expenditure on land and intangible assets (net)	−14	−5	17	−7	−2	−24
Capital transfer payments	9	12	2	—	3	2
Advances paid (net)	4	6	−8	4	4	−4
Revenue and grants received	2,835	3,258	3,775	4,386	4,824	5,273
Taxes, fees and fines	1,595	1,817	2,080	2,309	2,537	2,779
Net operating surpluses of public trading enterprises	236	278	292	390	385	409
Property income and other revenue	248	326	436	447	515	702
Grants received	756	838	968	1,241	1,388	1,382
from Commonwealth Government	35	41	45	53	73	101
from State governments	721	797	923	1,187	1,315	1,282
Financing transactions	355	474	412	142	299	349
Increase in provisions	155	234	224	244	231	276
Deficit	**200**	**240**	**188**	−78	**68**	73
Deficit financing						
Net advances received from Commonwealth and State governments	16	20	22	12	24	28
Other deficit financing	184	220	166	−90	44	45

For more recent information on local government finance statistics, reference should be made to the publications and statistical services listed in the bibliography at the end of this chapter.

All levels of government

In the following table the transactions of the Commonwealth, State and local governments have been brought together and consolidated to provide details of the outlays and revenue of the public non-financial sector as a whole.

Summary of outlays, revenue and deficit

The outlays, revenue and deficit of all governments for the years 1980–81 to 1985–86 are set out in the following table.

OUTLAYS, REVENUE AND DEFICIT OF COMMONWEALTH, STATE AND LOCAL GOVERNMENTS(*a*)

($ million)

	1980–81	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*
Current outlay	41,483	48,286	56,963	65,598	74,823	83,550
General government final consumption expenditure	21,664	24,937	28,405	31,990	35,848	39,946
Requited current transfer payments	4,311	5,328	6,679	8,291	10,551	13,051
Unrequited current transfer payments	15,508	18,021	21,880	25,318	28,425	30,553
Subsidies paid to enterprises	2,187	2,528	3,044	3,295	3,669	3,829
Personal benefit payments	11,482	13,307	16,225	18,974	21,303	23,032
Current grants	1,826	2,174	2,594	3,033	3,439	3,687
to non-profit institutions	1,252	1,509	1,858	2,260	2,583	2,831
to foreign governments and organisations	574	665	736	773	855	856
Other current transfer payments	14	13	17	15	15	6
Capital outlays	9,585	11,877	13,830	14,832	15,190	17,590
Gross fixed capital expenditure	9,053	10,870	12,478	13,386	14,234	16,567
Expenditure on new fixed assets	9,251	10,957	12,618	13,516	14,719	17,161
Expenditure on secondhand fixed assets (net)	−199	−88	−140	−130	−485	−594
Increase in stocks	241	424	488	275	−102	110
Expenditure on land and intangible assets (net)	−108	48	25	5	28	−145

OUTLAYS, REVENUE AND DEFICIT OF COMMONWEALTH, STATE AND LOCAL GOVERNMENTS(*a*)—*continued*

($ million)

	1980–81	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*
Capital transfer payments	204	317	376	509	603	520
Capital grants	204	317	376	467	565	504
Other capital transfer payments	—	—	—	42	37	16
Advances paid (net)	195	219	464	657	427	538
Revenue	45,188	52,852	58,522	64,670	76,058	85,832
Taxes, fees and fines	40,407	46,977	51,442	56,344	65,848	72,963
Net operating surpluses of public trading enterprises	2,498	3,042	3,615	4,431	5,414	5,939
Property income and other revenue	2,283	2,833	3,465	3,895	4,796	6,931
Financing transactions	5,880	7,311	12,271	15,760	13,955	15,308
Increase in provisions	1,648	1,979	2,324	3,142	3,017	3,668
Deficit	**4,232**	**5,332**	**9,947**	**12,618**	**10,938**	**11,640**

(*a*) Excludes financial enterprises.

Public sector borrowing

Figures given in this section do not purport to show either 'public debt' or 'net public debt', but are designed to provide details of securities issued on behalf of the Commonwealth Government, the States and the Northern Territory together with some details of the amounts borrowed by State, Territory and local governments with independent borrowing powers.

For a number of reasons, this information cannot be aggregated, without adjustment, to provide a measure of the 'debt' of public sector enterprises. There are forms of debt not evidenced by the issue of securities, such as Commonwealth Government advances to the States and Northern Territory for specific capital purposes. Governments themselves maintain significant holdings of their own securities; for example, the Commonwealth Government, in the National Debt Sinking Fund, the Loan Consolidation and Investment Reserve, and in other Trust Funds, holds large investments in securities issued either directly by itself or on behalf of the States and the Northern Territory. Some of the securities issued on behalf of the States and held by the Commonwealth Government represent the proceeds of overseas loans, securities for which were issued directly by the Commonwealth Government, the Australian currency counterpart proceeds of the loans being invested in special loans to finance State and Northern Territory works programs. A number of State and Northern Territory public corporations and local governments also maintain significant investments in government securities (including their own securities). Aggregation of the figures for securities on issue which follow would clearly involve a substantial degree of duplication; the sum of securities on issue therefore cannot be regarded as representing 'net public debt'.

Commonwealth Government and States and the Northern Territory: government securities on issue

Under the 1927 Financial Agreement between the Commonwealth Government and the States (as amended to 1976), the Commonwealth Government accepted responsibility for the securities of State governments then on issue and was empowered to arrange for all future borrowings on behalf of the Commonwealth and the States and to issue Commonwealth Government securities for all moneys borrowed.

During 1985–86, an agreement was reached with the Northern Territory Government for the formal allocation of securities relating to the Northern Territory Government's Borrowing program and associated (nominal) debt allocations.

A National Debt Sinking Fund, which is administered by the National Debt Commission, was established by the *National Debt Sinking Fund Act, 1923* for the redemption of securities issued on behalf of the Commonwealth Government. Under the terms of the Financial

Agreement, the sinking funds existing in respect of the States' debts were also placed under the control of the Commission. The Commonwealth Government is reimbursed by the States and the Northern Territory for interest, exchange, etc. paid on their behalf, and the securities are redeemed from the Fund to which both the Commonwealth, the State government and the Northern Territory (from 1985–86) make pre-determined contributions. The amounts to be contributed were varied when the *National Debt Sinking Fund Act, 1966* repealed all previous legislation on sinking funds relating to securities on issue on behalf of the Commonwealth Government, and again in 1976 when the Act was amended to reflect the amendments to the Financial Agreement. In 1976, the Commonwealth assumed the responsibility for over $1,000 million of States' debt existing as at 30 June 1975. As a consequence, the separate States' Sinking Funds were absorbed into the National Debt Sinking Fund, with separate accounts being maintained for the Commonwealth and each State and the Northern Territory.

For further information relating to the recent operations of the National Debt Sinking Fund reference should be made to the fifty-seventh annual report of the National Debt Commission. Particulars of the creation and operation of sinking funds by the *National Debt Sinking Fund Act, 1923* are included in issues of the *Year Book* prior to No. 23, and a general description of the provisions applying between 1966 and 1976 is given in issue No. 61.

In the tables which follow, details are given of transactions in Commonwealth Government securities issued on account of the Commonwealth Government, the States and the Northern Territory from 1985–86. Amounts relating to overseas loans are shown in Australian currency equivalent calculated on the basis of the rates of exchange ruling at 30 June in each year shown. All amounts are at face value.

For figures which permit accurate analysis of the structure and movement of securities issued on behalf of the Commonwealth and States, refer to the Commonwealth Budget Paper No. 8, *Government Securities on Issue*.

Net movement in securities on issue

Summary details of the net movement in securities issued for Commonwealth Government purposes and on account of the States during the period 1981–82 to 1986–87, are given in the following group of tables.

NET MOVEMENT IN GOVERNMENT SECURITIES ON ISSUE

($ million)

	1981–82	*1982–83*	*1983–84*	*1984–85*	*1985–86*	*1986–87*
NEW SECURITIES ISSUED						
Securities repayable in Australian currency—						
Treasury bonds	3,385.8	6,253.8	10,850.0	9,222.2	6,850.3	5,402.7
Treasury indexed bonds	—	—	—	—	331.8	303.7
Australian savings bonds	1,312.9	4,204.6	3,599.1	505.2	487.9	138.7
Special bonds	—	—	—	—	—	—
Income equalization deposits	57.6	55.6	24.0	3.7	0.8	0.4
Drought bonds	—	—	—	—	—	—
Overdue securities	—	—	—	—	—	—
Tax-free stock	—	—	—	—	—	—
Debentures	—	—	—	—	—	—
Stock issued to Government savings banks under special agreements(*a*)	53.3	61.9	114.6	71.1	—	—
Treasury notes	12,594.5	—	—	—	—	—
Treasury bills—						
Internal	1,718.0	—	—	—	—	—
Public	14,200.0	—	—	—	—	—
Other(*b*)	—	—	—	—	31.0	—
Total	*33,322.1*	*10,575.9*	*14,587.8*	*9,802.2*	*7,701.9*	*5,845.5*
Securities repayable in overseas currencies(*c*)	831.3	1,077.0	1,238.4	1,729.1	2,555.2	2,886.1
Total new securities issued	**34,153.4**	**11,652.9**	**15,826.2**	**11,531.3**	**10,254.1**	**8,731.6**

NET MOVEMENT IN GOVERNMENT SECURITIES ON ISSUE—*continued*

($ million)

	1981–82	*1982–83*	*1983–84*	*1984–85*	*1985–86*	*1986–87*
REDEMPTIONS, REPURCHASES, CANCELLATIONS(*d*)						
Securities repayable in Australian currency—						
Treasury bonds	2,317.0	3,117.0	3,189.2	2,990.2	4,621.6	3,587.2
Treasury indexed bonds	—	—	—	—	0.5	0.6
Australian savings bonds	1,913.9	1,736.8	1,619.9	1,177.3	2,493.0	650.5
Special bonds	122.8	71.0	31.5	—	—	—
Income equalization deposits	55.2	65.8	48.6	40.5	27.9	19.1
Drought bonds	0.1	—	—	—	—	—
Overdue securities	−3.3	8.2	9.0	8.8	2.4	1.4
Tax-free stock	0.9	0.1	0.2	0.1	—	—
Debentures	4.4	3.3	—	—	—	—
Stock issued to Government savings banks under special agreements(*a*)	3.6	5.8	6.0	6.2	19.0	31.8
Treasury notes	12,441.9	44.2	1,562.8	−821.7	−3,958.8	−1,286.9
Treasury bills—						
Internal	1,509.7	152.2	479.6	212.9	−107.3	627.1
Public	14,700.0	1,400.0	—	—	—	—
Other(*b*)	—	—	—	—	—	5.4
Total	*33,068.9*	*6,604.5*	*6,946.9*	*3,614.4*	*3,098.5*	*3,636.1*
Securities repayable in overseas currencies(*c*)	131.3	1,523.9	666.1	2,697.0	4,217.2	2,533.5
Total redemptions, etc.	**33,199.4**	**8,128.4**	**7,612.9**	**6,311.4**	**7,315.7**	**6,169.6**
NET MOVEMENT						
Securities repayable in Australian currency—						
Treasury bonds	1,068.8	3,136.8	7,653.9	6,227.4	2,228.7	1,813.1
Treasury indexed bonds	—	—	—	—	331.3	303.1
Australian savings bonds	−601.0	2,467.8	1,975.6	−674.2	−2,005.1	−509.3
Special bonds	−122.8	−71.0	−31.9	—	—	—
Income equalization deposits	2.4	−10.2	−24.5	−36.8	−27.1	−18.6
Drought bonds	−0.1	—	−0.1	—	—	—
Overdue securities	3.3	−8.2	2.0	−2.2	−2.4	−1.4
Tax-free stock	−0.9	−0.1	−0.2	−0.1	—	—
Debentures	−4.4	−3.3	—	—	—	—
Stock issued to Government savings banks under special agreements(*a*)	47.7	56.1	108.7	64.9	−19.0	−31.8
Treasury notes	152.6	44.2	−1,562.8	821.7	3,958.8	1,286.9
Treasury bills—						
Internal	208.3	−152.2	−479.6	−212.9	107.3	−627.1
Public	−500.0	−1,400.0	—	—	—	—
Other(*b*)	—	—	—	—	30.8	−5.4
Total	*254.0*	*3,971.4*	*7,640.9*	*6,187.8*	*4,603.4*	*2,209.4*
Securities repayable in overseas currencies(*c*)	700.0	−446.9	572.3	−967.9	−1,662.0	352.6
Net movement in securities on issue	**954.0**	**3,524.5**	**8,213.3**	**5,219.9**	**2,941.4**	**2,562.0**

(*a*) Recorded in Commonwealth Government Loan Fund as State domestic raisings. (*b*) Loans taken over from the previous Canberra Commerical Development Authority. (*c*) Australian currency equivalent at rates of exchange ruling at 30 June in each of the years shown. (*d*) Includes conversions from one type of security to another, which affect the net movements of individual loan categories, but do not affect the overall net movement.

NOTE: For securities repayable in overseas currencies the amounts shown also include an element due to exchange rate variations in Securities on Issue.

Government securities on issue

The following table provides details of government securities on issue on account of the Commonwealth Government, the States and the Northern Territory, repayable in Australian and in overseas currencies.

GOVERNMENT SECURITIES ON ISSUE: COMMONWEALTH GOVERNMENT AND STATES AND NORTHERN TERRITORY

($ million)

	30 June					
	1982	*1983*	*1984*	*1985*	*1986*	*1987*
For Commonwealth Government purposes—						
Repayable in Australian currency—						
Treasury bonds	5,570.0	8,307.7	15,493.6	21,288.6	22,310.8	23,826.0
Treasury indexed bonds	—	—	—	—	331.3	634.5
Australian savings bonds	381.2	2,633.9	4,577.3	3,914.7	2,033.6	1,682.8
Special bonds	11.1	1.3	—	—	—	—
Income equalization deposit	165.7	155.5	130.9	94.1	67.1	48.4
Drought bonds	0.2	0.1	—	—	—	—
Advance loan subscriptions	—	—	—	—	—	—
Overdue securities	7.8	6.8	8.8	6.7	5.5	4.7
Treasury notes	3,680.0	3,635.8	2,073.0	2,894.7	6,853.5	8,140.4
Treasury bills—						
Internal	1,364.5	1,212.3	732.7	519.8	627.1	—
Public	1,400.1	—	—	—	—	—
Other(*a*)	—	—	—	—	30.7	25.3
Total	*12,580.4*	*15,953.4*	*23,016.4*	*28,718.7*	*32,259.7*	*34,362.0*
Repayable in overseas currencies(*b*)	5,335.7	6,905.2	7,076.2	9,786.4	13,827.0	15,058.8
Total Commonwealth Government	*17,916.1*	*22,858.5*	*30,092.6*	*38,505.1*	*46,086.7*	*49,420.9*
On account of States—						
Repayable in Australian currency—						
Treasury bonds	13,067.0	13,464.2	13,932.2	14,364.6	15,569.6	15,867.5
Australian savings bonds	1,828.7	2,038.9	2,071.1	2,059.4	1,934.7	1,776.3
Special bonds	92.5	30.6	—	—	—	—
Tax-free stock	13.9	13.8	13.6	13.5	13.5	13.5
Stock issued to Government savings banks under special agreements	651.6	707.8	816.5	881.3	862.3	830.5
Debentures	3.3	—	—	—	—	—
Overdue securities	—	0.2	0.1	—	1.2	0.6
Total	*15,657.0*	*16,255.5*	*16,833.4*	*17,318.9*	*18,381.3*	*18,488.4*
Repayable in overseas currencies(*b*)	16.3	13.9	7.7	6.4	5.4	5.3
Total States	*15,673.3*	*16,269.4*	*16,841.1*	*17,325.2*	*18,386.7*	*18,493.7*
of which—						
New South Wales	5,108.1	5,327.9	5,566.5	5,773.5	5,999.2	6,042.6
Victoria	3,932.4	4,045.3	4,204.1	4,385.5	4,550.1	4,587.2
Queensland	2,113.0	2,198.7	2,291.6	2,376.6	2,459.2	2,477.5
South Australia	1,961.9	2,035.2	2,009.4	1,598.2	1,982.9	1,577.3
Western Australia	1,486.3	1,547.8	1,614.9	1,990.6	1,591.5	1,965.4
Tasmania	1,071.6	1,114.4	1,154.5	1,200.7	1,246.3	1,256.4
Northern Territory	—	—	—	—	557.7	587.4
Total Commonwealth Government and States	**33,589.4**	**39,127.9**	**46,933.6**	**55,830.3**	**64,473.4**	**67,914.6**

(*a*) Includes loans taken over from the previous Canberra Commercial Development Authority. (*b*) Australian currency equivalent.

State and local authorities' borrowings

The borrowings of Commonwealth, State and local authorities first came within the purview of the Loan Council under a 'gentlemen's agreement' originating in 1936. Since 1984–85 the 'gentlemen's agreement' has been replaced by the Global Approach whereby the Loan Council determines a voluntary global limit to apply to all new money borrowings by all public trading enterprises (except statutory marketing boards) and local governments. Details of the Global Approach are contained in Commonwealth Budget Paper No. 7 *Payments to and for the States, the Northern Territory and Local Government Authorities.*

The following table shows the aggregate borrowings by the State and local authorities in each of the years 1983–84 to 1987–88.

'GLOBAL' NEW MONEY BORROWINGS BY COMMONWEALTH, STATE AND NORTHERN TERRITORY SEMI-GOVERNMENT AND LOCAL AUTHORITIES (*a*), 1983–84 TO 1987–88

(*Source: Commonwealth Budget Paper (1987–88)* No. 4 Table 99)

($ '000)

	New South Wales	*Victoria*	*Queensland*	*Western Australia*	*South Australia*	*Tasmania*	*Northern Territory*	*States And The Territory*	*Commonwealth*	*Total*
CONVENTIONAL BORROWINGS (*b*)										
1983–84 .	1,164,200	1,207,100	908,972	650,246	173,400	173,759	12,680	4,290,357	353,035	4,643,392
1984–85 .	1,337,282	2,007,130	736,789	770,442	478,500	225,623	37,250	5,593,016	622,065	6,215,081
1985–86 .	1,757,683	1,855,960	740,512	741,332	245,700	228,135	57,750	5,627,072	825,650	6,452,722
1986–87 .	1,792,622	1,783,270	848,700	531,133	305,600	216,053	86,300	5,563,678	678,497	6,242,175
OTHER BORROWINGS (*c*)										
1983–84 .	729,692	373,231	(*d*)743,028	148,500	307,600	6,477	3,940	2,312,468	404,914	2,717,382
1984–85 .	603,366	(*e*)−22,308	(*d*)815,211	47,616	14,500	3,365	12,740	1,474,418	578,154	2,052,572
1985–86 .	301,381	150,700	798,400	—	154,300	1,865	7,250	1,413,896	363,517	1,777,413
1986–87 .	52,378	75,580	538,300	103,867	44,400	947	—	815,472	780,447	1,595,919
TOTAL 'GLOBAL' BORROWINGS										
1983–84 .	1,893,892	1,580,331	(*d*)1,652,000	798,746	481,000	180,236	16,620	6,602,825	757,949	7,360,774
1984–85 .	1,940,648	1,984,822	(*d*)1,552,000	818,058	493,000	228,988	49,990	7,067,434	(*f*)1,200,219	8,267,653
1985–86 .	2,059,064	2,006,660	1,538,912	741,332	400,000	230,000	65,000	7,040,968	(*f*)1,189,167	8,230,135
1986–87 .	1,845,000	1,858,850	1,387,000	635,000	350,000	217,000	86,300	6,379,150	(*f*)(*g*) 1,458,944	7,838,094
1987–88(*h*)	1,539,700	1,526,400	1,160,500	584,000	300,800	181,600	65,000	5,358,000	(*f*) 1,187,900	6,545,900

(*a*) Includes borrowings by all Commonwealth, State and Northern Territory semi-government and local authorities, government-owned companies and trusts. (*b*) Includes 'conventional' loan raisings under the Gentlemen's Agreement for 1983-84, and within the global limits thereafter. (*c*) Includes borrowings by way of domestic deferred payments, overseas trade credits, financial leases, sale and leaseback and similar arrangements, security deposits and other repayable capital contributions, and identified net changes in temporary purpose borrowings over the financial year. (*d*) Commonwealth Treasury estimates. (*e*) Negative reflecting a decline in temporary purpose borrowings outstanding over the course of 1984-85. (*f*) Includes 'implicit' borrowings associated with the Commonwealth's instalment purchase of Commonwealth Government Offices. (*g*) Includes unexpected net increase in temporary purpose borrowings of $54.9 million. (*h*) 'Global' new money limits agreed by Loan Council at its May 1987 Meeting.

Additional details of the transactions of public authorities engaged in particular fields of activity, such as defence, transport and communication, health and welfare, education, etc., may be found in other chapters of this *Year Book*.

THE DEVELOPMENT OF COMMONWEALTH–STATE FINANCIAL ARRANGEMENTS IN AUSTRALIA

(*This special article has been contributed by Professor Russell Mathews*)

This article reviews the development of Commonwealth–State financial arrangements in Australia, with special reference to the assignment of powers, taxation, grants arrangements, and public sector borrowing. References to the Australian States should be taken to include the Northern Territory, which has been self-governing since 1978. The Australian Capital Territory continues to be administered by the Commonwealth (Federal) Government.

The assignment of taxing, borrowing and expenditure powers

The Commonwealth Constitution gives the Commonwealth and the States concurrent powers over all forms of taxation other than customs and excise duties, which are exclusive to the Commonwealth. Except for rents or royalties from offshore minerals, which the Commonwealth has agreed to share with adjoining States, the States control natural resource revenues resulting from the reservation of mineral rights for the Crown. States are also able to derive revenues from resource development indirectly, for example through charges for rail or electricity services. Although generally precluded from granting any bounties on the production or export of goods, this restriction does not apply to metals, and States are able to subsidise mineral production indirectly through the prices they charge for services. For its part, the Commonwealth has been able to control some mining operations indirectly by refusing to grant export licences; it also has the power to impose export taxes.

Commonwealth and State governments originally had concurrent powers with respect to borrowing and the public debt. However, following a financial Agreement between the Commonwealth and States in 1927, the Constitution was amended to establish the Australian Loan Council with the power to control the amounts, terms and conditions of most Commonwealth and State borrowing in Australia. For reasons discussed below, the Commonwealth has exercised a large measure of control over the Loan Council and hence over public sector borrowing.

Under the Commonwealth Constitution, the Commonwealth Government has the responsibility for those functions of government which are international in character (such as defence and foreign affairs), involve national matters (such as citizenship and currency) or have interstate ramifications (such as activities extending beyond the limits of individual States). The States have the formal responsibility for most aspects of law and order, social services, local government, community and economic services, and resource development. However, in many of these areas responsibility is shared between the Commonwealth and the States depending on whether the activities have international or interstate dimensions or are confined within individual States. Thus international and interstate trade and commerce, conciliation and arbitration in relation to industrial disputes extending beyond the limits of any one State, and banking other than State banking within a State are the subject of Commonwealth powers while similar activities within States are controlled by State laws. In addition, the Commonwealth has used its financial powers, especially a general grants power whereby it can provide financial assistance to States on such terms and conditions as it sees fit, to involve itself in various ways in functions such as education, health and transport which are formally State responsibilities. Both in this way and as a result of the interdependence of the two levels of government in relation to many areas of decision making, there is a significant degree of sharing of responsibility for social and economic policies.

Although the Constitution does not distinguish between the economic stabilisation, income distribution and resource allocation functions of government, the Commonwealth has assumed primary responsibility for the first two while the States retain a large measure of control over resource allocation decisions within the public sector. While the Commonwealth and the States both exercise important regulatory functions (again depending on whether activities are international/interstate or intrastate), the States and their local governments undertake most of the final expenditure by the public sector on goods and services. The Commonwealth's budget is to a large extent a redistributive mechanism or clearing house for making financial transfers between and within the private and public sectors. Some 80 per cent of total Commonwealth outlays consist of transfer payments to persons or families, and payments to State or local governments.

The Commonwealth has explicit constitutional responsibility for the provision of cash social service benefits. This, combined with its involvement through grants to the States, means that the Commonwealth shares responsibility for social welfare with the States, which have the task of organising the direct provision of education, health, housing and other social services.

The Commonwealth and the States both operate business undertakings in fields such as banking, transport, electricity and gas, and water supply. The Commonwealth has constitutional responsibility for postal and telecommunication services.

Taxation

Customs and excise duties provided more than three-quarters of colonial tax revenues at the time of Federation. Although these duties then became exclusive to the Commonwealth, the Constitution required at least three-quarters of the revenues derived from them to be paid to the States during the first ten years of Federation. However, first the States and then, during World War I, the Commonwealth began to exploit personal and company income taxes on a significant scale. The aggregate amount of Commonwealth and State income taxes still did not exceed the revenue from customs and excise duties at the commencement of World War II, but by then the States were collecting nearly three-quarters of all income taxes. Attempts to co-ordinate income tax arrangements during the 1920s, including a proposal by the Commonwealth that it should withdraw altogether from personal income taxes in exchange for the abolition of its general revenue grants to the States and the retention of its right to levy company taxes, had failed, except for the introduction of joint collection arrangements in 1923.

In 1942 the Commonwealth, faced with the problem of financing a massive war effort from an income tax base which could not be fully exploited because of widely differing State rates, introduced uniform tax legislation which gave it a monopoly over all income taxes. It did this by imposing rates which were as high as to preclude the continuation of State income taxes, and at the same time providing for tax reimbursement grants to be paid to the States so long as they refrained from levying their own income taxes.

As part of new tax sharing arrangements introduced in 1976 (which are discussed below in the section on grants), the Commonwealth made provision for State personal income tax subcharges to be collected by the Commonwealth on behalf of the States or for State rebates to be granted at their expense, on the basis of a continuation of uniform assessment and collection. So far no State has taken advantage of this provision.

The other factor which has played a decisive role in the distribution of taxing powers has been a series of decisions by the High Court, which have had the effect of excluding the States from sales taxes on goods on the grounds that they are excise duties, which under the Constitution are exclusive to the Commonwealth.

The result has been that the States have been denied access to the most important direct and indirect revenue sources available to states or provinces in other federations. The Australian tax system has become one of the most highly centralised in the world, with the Commonwealth collecting some 80 per cent of all taxes and the States only about 16 per cent (the remaining 4 per cent representing local taxes). There has also been a vertical separation of taxes as between the Commonwealth and State/local taxes, as well as a revenue gap with neither level of government imposing a broad-based consumption tax or, since their abolition during the 1970s, death duties. Likewise, there are no general taxes on capital or capital accretion at either the Commonwealth or State level. Only recently has the Commonwealth begun to tax capital gains on a systematic basis.

The principal Commonwealth taxes are thus individuals and company taxes (which provide more than two-thirds of total Commonwealth tax revenue), customs and excise duties, and a selective and differentiated wholesale sales tax. The principal State taxes are pay-roll tax (transferred by the Commonwealth in 1971 to alleviate the fiscal imbalance between the two levels of government), stamp duties, motor taxes, business franchise taxes, liquor taxes, gambling taxes, levies on statutory corporations and land tax.

Grants arrangements

Commonwealth–State grants may take the form of either general purpose or specific purpose grants. Both may include grants for recurrent as well as capital purposes, both may have conditions attached to them and both may include fiscal equalisation provisions.

General purpose grants

Although the Commonwealth was required to share its customs and excise revenues with the States during the first ten years of Federation, the initial general purpose grants strictly defined commenced in 1910–11 and took the form of equal per capita payments (of $2.50) to all States. These continued until 1926–27, after which they were replaced by specific purpose grants in the form of debt charges assistance as part of a general financial adjustment under the Financial Agreement.

The principal general purpose grants in Australia during recent years have been those which resulted from the uniform income tax arrangements referred to in the previous section. The tax reimbursement grants which commenced in 1942–43 were succeeded by financial assistance in 1959–60, whereby the aggregate level of grants was increased each year in accordance with a formula that had regard to changes in population and wage rates and a so-called betterment (or real growth) factor. In 1976–77, the financial assistance grants were replaced by what were called, first, tax sharing entitlements and, later, tax sharing grants, the aggregate level of which depended, subject to varying guarantee provisions, on Commonwealth personal income tax collections and, later, Commonwealth total tax collections. In 1985–86, however, the Commonwealth's principal general purpose grants to the States again came to be called financial assistance grants, with provision for escalating them each year in such a way as to achieve Commonwealth-designated changes in real terms.

The basis of a distribution of the foregoing general purpose grants is considered below. Since 1970–71, the Commonwealth has also been making general purpose capital grants to the States; these also are discussed below.

Specific purpose grants

The first important specific purpose grants from the Commonwealth to the States, which were for roads, commenced in 1923. As noted above, these were followed from 1927-28 by debt charges assistance under the Financial Agreement. After World War II, the Commonwealth began to make grants for such purposes as universities, tuberculosis and mental hospitals, railways and economic development. Advances were also made for housing at subsidised interest rates.

The 1960s and early 1970s were years of acute financial crisis for State governments. Ever since the introduction of uniform taxation, they had been squeezed between the opposing forces of inadequate revenue sources and growing costs of education, health, transport and other services for which they were responsible. In addition to their attempts to have the financial assistance grants increased, therefore, they also actively sought specific purpose grants or accepted assistance when offered. The scope and size of specific purpose programs increased steadily throughout this period. In the years from 1972–73 to 1975–76, specific purpose payments to State and local governments more than quadrupled in money terms, growing from one-quarter to total payments to nearly half.

Existing programs were continued and many new programs were commenced, commissions and other statutory bodies being used to advise on the needs of tertiary education institutions, schools, children's services, hospitals and health services, social welfare, the national heritage, cities and roads. The Commonwealth Grants Commission was given the task of advising on financial assistance for local government. The Commonwealth also assumed full financial responsibility for higher education and took over some State railway systems.

The rapid growth in specific purpose payments eased the States' financial problems and made it easier for them to finance the burgeoning costs of education, health and the other services for which they were responsible, while paradoxically placing the Commonwealth's own budget under increasing strain. There were continuing disputes between the two levels of government about the planning and administration of programs, as well as serious weaknesses in the Constitution. The operation of the advisory commissions also caused problems including defining their relationship to the Commonwealth Government and Parliament, duplication of their activities with those of Commonwealth and State departments, failure to integrate their recommendations in the normal budget processes, virtual freedom from financial constraints and arbitrary methods of distributing the funds among the States. They did not operate as intergovernmental co-ordinating agencies, even though they were advising on financial assistance to States for purposes which were State constitutional responsibilities.

Within a few years after their establishment, most of the specific purpose commissions were abolished or absorbed into Commonwealth departments, leaving only the Commonwealth Tertiary Education Commission and the Commonwealth Schools Commission with major advisory responsibilities in relation to specific purpose grants. They were now required to operate within designated Commonwealth policies and budgetary guidelines, so that they were concerned chiefly with advising on the relative needs of the educational institutions for which the Commonwealth's financial assistance was being provided.

After 1975, many specific purpose programs were abandoned or run down (especially those related to urban affairs, social welfare, housing and transport), while some of the major health programs were consolidated into block grants which the Commonwealth has announced will be absorbed into financial assistance grants after 1988. The education grants were roughly maintained in real terms, and during recent years there has been a resurgence of specific purpose payments for social welfare, housing and roads so that the aggregate level of this form of assistance remains high. The States continue to have little influence over the form, administrative procedures and conditions attaching to specific purpose programs. However, the lack of stringent revenue conditions has meant that they have generally been able to substitute grants for their own revenue raising, giving them greater revenue flexibility and not significantly impeding their own determination of budget priorities. Even when health grants are excluded, specific purpose payments continue to account for about two-fifths of all Commonwealth payments to the States.

Equalisation grants

What came to be called special grants were paid to financially weaker States, commencing in 1910-11 for Western Australia and being extended to Tasmania and South Australia in 1912-13 and 1929-30 respectively. Initially the claims for specific grants were based on disabilities associated with federal tariff, maritime, arbitration and other policies, but the grants tended to be arbitrarily determined on the basis of political decisions or following ad hoc parliamentary or other inquiries.

Secession movements developed in the three States during the early 1930s as a consequence of disaffection with the effects of Federation. In Western Australia, a secession referendum which had the support of the State Government was passed with a two-thirds majority in 1933. There was, however, no provision in the Commonwealth Constitution for secession by a State and the British Parliament declined to take any action in response to a Western Australian petition. A month after the referendum, the Commonwealth Parliament established the Commonwealth Grants Commission to inquire into and report on applications by the States for special financial assistance.

In its Third Report in 1936, the Commission decided that the financial need of a State, and not any disabilities it suffered as a result of Federation or Commonwealth policies, should be the principle used to determine whether or not a State should receive a special grant. In accordance with this principle and following annual reviews, special grants were paid to the three financially weaker States on the recommendation of the Commission; the Commission's recommendations with respect to special grants were always accepted by the Commonwealth Government.

The principle of financial need was subsequently modified until eventually the special grants became fiscal capacity equalisation grants, defined as the amounts considered necessary to enable the States seeking assistance (so-called claimant States) to provide comparable services to those being provided by the standard States (eventually New South Wales and Victoria, the States with the highest fiscal capacity), subject to them also imposing taxes and charges at comparable levels. The claimant States remained free to determine the levels and pattern of revenue raising and expenditure in accordance with their own policies, so that the special grants had the effect of reconciling equality with the diversity and decentralised decision making which are the distinguishing characteristics of a federal system.

The introduction of uniform income taxation in 1942 complicated the task of assessing special grants, since its now became necessary for the Commission to take into account the distribution of the tax reimbursement grants (later financial assistance grants) among the States as well as its assessments of the revenue and expenditure needs of the claimant States.

Except for a brief period towards the end of the 1950s, when those grants were distributed on a basis very close to equal per capita, the distribution came to reflect ad hoc political decisions and it became possible for the three financially weaker States to receive such favourable shares of the financial assistance grants as to make them ineligible for special grants. At varying times after 1959, South Australia, Western Australia and Tasmania ceased applying for and receiving special grants, although South Australia subsequently became a claimant State again between 1970 and 1974 and Queensland applied for and received special grants from 1971 to 1982, when all States agreed not to apply for special grants following reviews of the tax sharing relativities of all States by the Grants Commission.

The first review of tax sharing relativities, which was undertaken as part of the tax sharing arrangements which commenced in 1976, was completed in 1981. The Grants Commission was required to apply the fiscal equalisation principle. For this purpose, it developed a model which would distribute the total funds being provided to the States on the basis of equal per capita shares adjusted for differences in the costs of providing standard services, difference in the capacities to raise revenues from the application of a standard revenue effort, and differences in the per capita amounts of relevant specific purpose grants.

The Commission's assessments implied that, to achieve fiscal equalisation, there should be significant shifts away from the existing distribution of the tax sharing grants to the advantage of the three most populous States—New South Wales, Victoria and Queensland—and to the disadvantage of the other three States. Only marginal changes to the distribution were made following the 1981 review and a further review by the Commission that was completed in 1982, but after another review completed in 1985 State relativities were changed in line with the Commission's assessments so that State financial assistance grants are now being distributed on a fiscal equalisation basis. Another triennial review by the Commission commenced in 1986 for report by 1988.

The present arrangements for distributing financial assistance grants preclude State applications for special grants, but the Northern Territory continues to be eligible for such grants until 1988, after which it will be brought fully into the State financial assistance grants arrangements. In 1986 the Commonwealth asked the Grants Commission to report on whether the amounts of financial assistance received by the Territory in 1983–84 and 1984–85 exceeded the amounts necessary to provide standard services at standard rates of revenue raising.

Among its other tasks, the Grants Commission has also reviewed the finances of the Australian Capital Territory by reference to fiscal equalisation principles, reporting first in 1984 and again in 1986.

Public sector borrowing

The Australian Constitution made provision for the Commonwealth to take over State debts existing at the time of Federation, and this was extended by the Constitutional amendment in 1910 to permit the takeover of all State debts and not merely those which existed in 1901.

During the 1920s, arrangements were made to co-ordinate public sector borrowing through the establishment of an informal Loan Council, but the Commonwealth remained unwilling to accept responsibility for State debts as long as the States were free to determine their own borrowing policies independently. Arguments about the assignment of income tax powers between the two levels of government, and about the continuation of the $2.50 per capita grants which the Commonwealth had been making as general revenue payments to the States since 1910, eventually coalesced with the arguments about debt management and borrowing arrangements and resulted in the Financial Agreement of 1927. This provided for: the establishment of the Australian Loan Council as the body formally responsible for Commonwealth and State borrowing; the takeover of State debts by the Commonwealth while leaving the States with the obligations to indemnify the Commonwealth for interest and sinking fund payments on those debts and on all future borrowing now to be undertaken by the Commonwealth on their behalf; and the replacement of the per capita grants by debt charges assistance to be linked with sinking fund arrangements. Following Constitutional amendment in 1928, these providions of the Financial Agreement became formally embodied in the Constitution.

Following a so-called Gentleman's Agreement in 1936, the Loan Council's control was extended to local and semi-government authorities, so that henceforth all public sector borrowing, other than borrowing for defence or for temporaty purposes, came under its jurisdiction.

During the Great Depression the Loan Council and its alter ego, the Premier's Conference, played a decisive role in the determination of economic and fiscal policy, with the States exercising control jointly with the Commonwealth. After the introduction of uniform taxation in 1942, however, the Commonwealth came to dominate the Council and henceforth decisions about the amounts and conditions of public sector borrowing, like other key elements of fiscal policy, were effectively made by the Commonwealth Government. The Commonwealth achieved this domination by a combination of its income tax monopoly, its control over the Reserve Bank, its use of the grants power and its underwriting of State loan programs through so-called special loans. These were provided to the States, on the same terms as public loans, to make up any shortfall in public loan raising in respect of approved programs. The price for the States was that the amounts and terms of all loan raising—not only by State governments but also by their semi-government and local authorities—were now determined by the Commonwealth, and the States increasingly became indebted to the Commonwealth as special loans proved to be necessary in nearly every year between the early 1950s and the early 1970s.

There were some adjustments to the borrowing and debt arrangements in the early 1970s, involving, first, the progressive takeover by the Commonwealth of $1,000 million of State debts and the charges thereon and, second, the substitution of capital grants by the Commonwealth for approximately one-third of the approved State Loan Council programs. The Commonwealth also began to pass the State programs through its own budget, providing itself with an incentive to impose tight restraints on the size of the programs as it began to incur large deficits of its own in the second half of the 1970s and the 1980s. Over a ten-year period the real value of the State Loan Council programs was halved.

During the same period, however, there was a relaxation of controls over State semi-government and local borrowing, involving a series of decisions by the Loan Council designed mainly to facilitate the financing of resource development. These included: so-called infrastructure financing, whereby loans for individual development projects were approved between 1978 and 1981; the freeing of electricity authority borrowing from Loan Council control from 1982; and the progressive deregulation of borrowing by other authorities—as to both amounts and terms and conditions—from 1983. From 1982, also, States were permitted to establish central borrowing authorities to co-ordinate and consolidate borrowing by their authorities.

The States had been responding to the restrictions on their own Loan Council programs by resorting to a wide range of non-conventional forms of borrowing. These included: security deposit arrangements, whereby State governments required private companies involved in resource development to finance public sector infrastructure such as railway and port construction; leasing arrangements; commercial buyer or supplier credit; deferred payments; instalment purchasing; and export credits. As a result borrowing outside approved Loan Council programs accounted for about 60 per cent of total net borrowing by 1983-84. In order to restore Loan Council oversight over authority borrowing, the Gentlemen's Agreement was suspended in 1984 in favour of a so-called global approach, whereby the Commonwealth and State Governments agreed to voluntarily limit authority borrowing from all sources to global limits agreed by the Council. In 1985 the Gentlemen's Agreement was formally terminated, so that the global approach now forms the basis of the Loan Council's oversight of authority borrowings, albeit with the States exercising a greater influence over the decisions taken. Interest rates and other terms and conditions are now left to individual governments and the market to determine.

Conclusion

It is possible to identify three phases in the development of Australian Commonwealth-State financial arrangements, involving what maybe called co-ordinate or decentralised federalism, co-operative federalism and centralised federalism respectively.

The first period, from 1901 to the 1920s, saw the Commonwealth and the States carrying out their fiscal responsibilities largely independently of each other, in accordance with the powers assigned severally to them by the Constitution.

The first period, from 1901 to the 1920s, saw the Commonwealth and the States carrying out their fiscal responsibilities largely independently of each other, in accordance with the powers assigned severally to them by the Constitution.

The period of co-operative federalism, which commenced during the 1920s and ended in 1942, was marked by the establishment of the Australian Loan Council and the Commonwealth Grants Commission, the sharing of fiscal responsibilities during the Great Depression of the 1930s and the establishment of the first Commonwealth-State ministerial councils, such as the Australian Agricultural Council, to co-ordinate policies in fields of common interest.

Centralised federalism commenced in 1942 with the uniform tax legislation and has been distinguished by Commonwealth domination over the Loan Council, constitutional amendments and judicial decisions which have had the effect of extending Commonwealth powers, the consolidation of a highly centralised taxation system, the substitution of Commonwealth general purpose grants for State income taxes, and the use of specific purpose grants on a massive scale to facilitate Commonwealth involvement in expenditure responsibilities for which the States are formally responsible under the Constitution.

At the time of Australia's bicentenary, there are some signs that some of these centralising tendencies may be relaxed or even reversed. The States have regained a degree of influence in the Loan Council within what is now a largely deregulated system of loan raising; they have access to income taxes if they choose to levy surcharges; the scale of Commonwealth general purpose and specific purpose grants during recent years has, paradoxically, substantially strengthened their fiscal positions at the expense of the Commonwealth; the recent work of the Commonwealth Grants Commission has resulted in a large measure of horizontal fiscal equalisation; and there has been a diminution in the importance of specific purpose grants relative to other funds available to the States. But the main impetus towards decentralising tendencies in Australia's federal financial arrangements is likely to come from the developing weakness in the Commonwealth's own budgetary position, as it endeavours to grapple with large deficits, contain the growth of government expenditures and reform the taxation system.

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Australian National Accounts, National Income and Expenditure (5204.0)
Quarterly Estimates of National Income and Expenditure, Australia (5206.0)
Government Financial Estimates, Australia (5501.0)
Commonwealth Government Finance (5502.0)
State and Local Government Finance, Australia (5504.0) and *Taxation Revenue, Australia* (5506.0)
Standardised Local Government Finance Statistics (tape and microfiche service) (1212.0)

Other Publications

A variety of publications are available from:
Australian Taxation Office
Department of Primary Industries and Energy

CHAPTER TWENTY-FIVE

NATIONAL ACCOUNTS

The historical setting

National accounting aims to provide a systematic summary of the transactions taking place in the economy, especially those that relate to the production and use of goods and services, and to transfers of income or capital between sectors of the economy.

Official estimates of Australian national income were first published in *The Australian Balance of Payments, 1928–29 to 1937–38*. The estimates used for this publication were, with only minor adjustments and revisions, those which had been produced in 1938 by Clark and Crawford for the years 1928–29 to 1935–36 but updated to 1937–38. Before this however, various estimates of Australian national income had been produced by a number of individuals. The first set of national accounts compiled by the ABS was published in the 1945 Budget White Paper *Estimates of National Income and Public Authority Income and Expenditure* and covered the period 1938–39 to 1944–45. The accounts were presented in a double-entry accounting form, showing a balance between gross national product and gross national expenditure.

The first major changes to the annual national accounts occurred in 1963 with the introduction of the annual publication, *Australian National Accounts, National Income and Expenditure* (5204.0). The contents, structure and presentation of the accounts were changed, with a considerable number of revisions being made to estimates published previously. Some of the revisions resulted from conceptual and definitional changes affecting the principal accounting aggregates, while others were due to the introduction of a new series of estimates for particular items which affected all years. Included for the first time with the 1963 accounts were constant price annual estimates of the principal expenditure aggregates.

The original United Nations *System of National Accounts and Supporting Tables*, published in 1953, was the first phase in the establishment of an internationally accepted framework within which the statistical information needed to analyse the economic process could be organised and related. Subsequent development of the accounting framework and its supporting concepts culminated in the publication by the United Nations in 1968 of detailed international standards for national accounting systems. In the 1971–72 issue of the *Australian National Accounts: National Income and Expenditure*, the structure of the accounting system was revised to accord more closely with the new international standards, concepts and definitions. An additional objective of the 1971–72 revisions was to align estimates of existing accounting aggregates with internationally reported aggregates following Australia's decision to join the Organisation for Economic Co-operation and Development (OECD).

Quarterly estimates of national income and expenditure were developed to provide more current indicators and to permit better analysis of the short-term behaviour of the economy and changes in trends in important variables. Quarterly estimates for Australia were first published in December 1960 for the period September quarter 1958 to September quarter 1960. The estimates were consistent with the annual figures published with the Commonwealth Government Budget in August 1960. *Quarterly Estimates of National Income and Expenditure, Australia* (5206.0) has been issued for each subsequent quarter. The definitions and concepts underlying the quarterly and annual accounts are identical. Seasonally adjusted series were presented first in the September 1967 edition. Quarterly series at constant prices were initially published in a supplement to the December 1970 edition, while seasonally adjusted constant price estimates were introduced in September 1971.

The design and preparation of input-output tables in the early post-war period was an important advance in the development of an integrated system of national accounts. By bringing intermediate transactions into account, input-output tables complete the description of all non-financial transactions within the economy. In Australia, experimental input-output tables for 1958–59 were published in 1964. Compilation was limited to the use of readily available data. Next in the series, final tables for 1962–63 were published in May 1973. That project laid the foundation for subsequent input-output tables for 1968–69; the final results were published in November 1977. The 1968–69 methodology followed that used in 1962–63 except for several limited modifications. An important feature of the 1968–69 tables was the use of data collected in the first integrated economic censuses conducted in respect of that year. Input-output tables for 1974–75 were the fourth in the series, and used a new Australian input-output estimation methodology. The introduction of the new methodology in 1974–75 enabled the time lag between the reference period and publication of the tables to be reduced and facilitated the introduction of an annual system of input-output tables. The final results were first made available in August 1980. The fifth in the series of input-output tables and the first of the annual tables was for 1977–78. The final results for that year were first made available in December 1982. Tables for subsequent years, up to 1980–81, have since been released.

Estimates of industry gross product at constant prices were presented first in the publication *Estimates of Gross Product by Industry at Current and Constant Prices, 1959–60 to 1965–66*, issued in 1969. This publication was expanded to include estimates of industry gross product at constant prices per person employed, and has been published since 1975. It is now titled *Australian National Accounts, Gross Product by Industry* (5211.0).

In 1981, the first in a series of Occasional Papers on studies in national accounting was issued. Occasional Papers are produced by officers within the National Accounts Branch of the Australian Bureau of Statistics, and report on various aspects of research being undertaken. They are not used for the release of official statistics and do not necessarily reflect the views of the ABS. Nevertheless, they encourage feedback from users regarding proposed new developments within the Australian system of national accounts. A list of the national accounts Occasional Papers produced to date is provided with the bibliography at the end of this chapter.

Two new annual publications, *Australian National Accounts, State Accounts* (5220.0) and *Australian National Accounts, Estimates of Capital Stock* (5221.0) were released in 1987. These publications provide important extensions to the range of national accounts data for Australia. Earlier developmental work in these areas had been reported in various Occasional Papers.

Description of national income and expenditure accounts

A brief description of the conceptual basis of national accounts is given in this section, but for a more detailed treatment of the concepts and structure of the Australian national accounts reference should be made to *Australian National Accounts, Concepts, Sources and Methods* (5216.0).

Definition and relationship of the concepts of product, income and expenditure

The main concepts of product, income and expenditure in the Australian national accounts are defined and expressed in equivalents as follows.

Gross domestic product is the total market value of goods and services produced in Australia within a given period after deduction of the cost of goods and services used up in the process of production but before deducting allowances for the consumption of fixed capital. Thus, gross domestic product, as here defined, is 'at market prices'. It is equivalent to gross national expenditure plus exports of goods and services less imports of goods and services. **Gross farm product** is that part of gross domestic product which derives from production in agriculture and services to agriculture. **Gross non-farm product** arises from production in all other industries.

Gross domestic product at factor cost is that part of the cost of producing the gross domestic product which consists of gross payments to factors of production (labour, land, capital and enterprise). It represents the value added by these factors in the process of production and is equivalent to gross domestic product less net indirect taxes.

Domestic factor incomes is that part of the value added within a given period by factors of production (labour, land, capital and enterprise) which accrues as income to their suppliers after allowing for the consumption of fixed capital. It is equivalent to gross domestic product at factor cost less consumption of fixed capital.

National income is the net income accruing within a given period to Australian residents from their services in supplying factors of production (labour, land, capital and enterprise) in Australia or overseas plus indirect taxes less subsidies. It is equivalent to domestic factor incomes plus indirect taxes less subsidies and net income paid overseas.

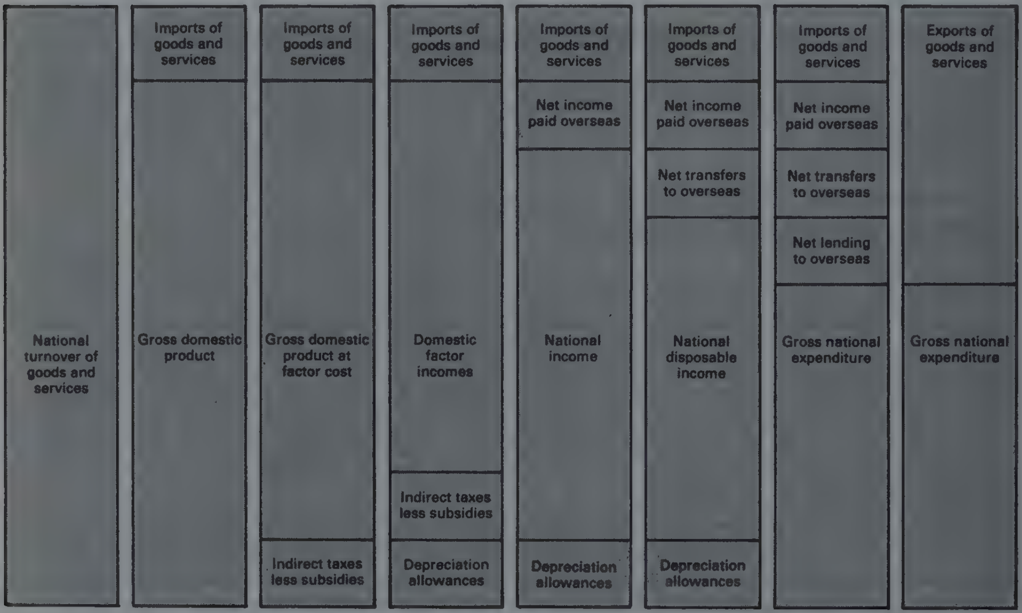
National disposable income is the net income accruing within a given period to Australian residents from their services in supplying factors of production, from net indirect taxes and from net transfers from overseas. It is equivalent to national income less net unrequited transfers to overseas.

Gross national expenditure is the total expenditure within a given period on final goods and services (i.e. excluding goods and services used up during the period in the process of production) bought by Australian residents. It is equivalent to the gross domestic product plus imports of goods and services less exports of goods and services.

Household income is the total income, whether in cash or kind, received by persons normally resident in Australia in return for productive activity (such as wages, salaries and supplements, incomes of unincorporated enterprises, etc.) and transfer incomes (such as cash social security benefits, interest, etc.). It includes the imputed interest of life offices and superannuation funds, which is the benefit accruing to policy holders and members from investment income of the funds. It also includes third party motor vehicle and public risk insurance claims paid to persons in respect of policies taken out by enterprises. However, it excludes any income which might be said to accrue to persons in the form of undistributed company income. It also includes any property income received by non-profit organisations such as private schools, churches, charitable organisations, etc.

The relationships between these aggregates (other than household income) are illustrated in the following diagram. No conclusions concerning the relative magnitude of various aggregates can be drawn from the diagram, especially as some of the boxes may represent negative values.

RELATIONSHIP OF MAIN IDENTITIES

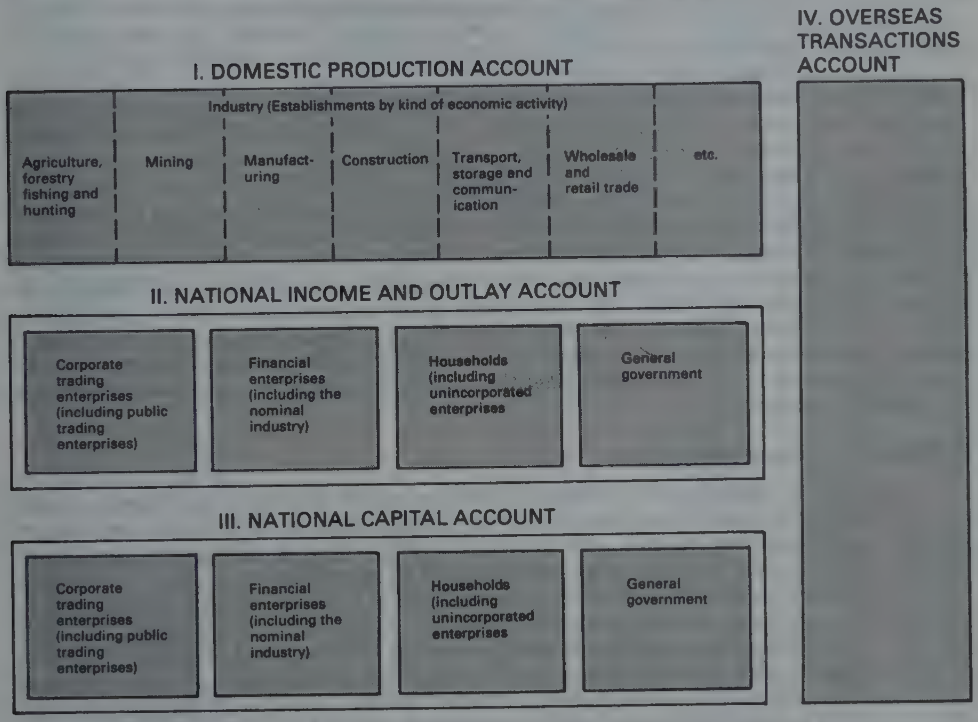

National turnover of goods and services
Imports of goods and services
Gross domestic product
Imports of goods and services
Gross domestic product at factor cost
Indirect taxes less subsidies
Imports of goods and services
Domestic factor incomes
Indirect taxes less subsidies
Depreciation allowances
Imports of goods and services
Net income paid overseas
National income
Depreciation allowances
Imports of goods and services
Net income paid overseas
Net transfers to overseas
National disposable income
Depreciation allowances
Imports of goods and services
Net income paid overseas
Net transfers to overseas
Net lending to overseas
Gross national expenditure
Exports of goods and services
Gross national expenditure

Framework of accounts and sectors

In the Australian national accounts, four internal sectors are distinguished: corporate trading enterprises (including public trading enterprises), financial enterprises (including the nominal industry), households (including their unincorporated enterprises) and general government. All of these internal sectors engage in productive activity, receive and disburse income and accumulate assets. In this publication no accounts are shown for individual internal sectors. The transactions of the internal sectors are summarised in three accounts: a domestic production account (*see* page 871), a national income and outlay account (*see* page 872) and a national capital account (*see* page 872). In addition, there is an overseas sector having an account (*see* page 873) which shows a summary of the transactions into which overseas governments, persons and businesses enter with Australian residents.

The framework of sectors and accounts underlying the Australian national accounts is set out in the following diagram. The large rectangles depict the minimum system of the four consolidated accounts of the nation. The light rectangles represent the accounts for institutional sectors. The subdivision of the domestic production account represents production accounts for establishments classified according to industry. Selected transactions from such production accounts are shown in *Australian National Accounts, National Income and Expenditure* (5204.0). Input-output tables are produced by developing such production accounts in detail.

ARTICULATION OF AUSTRALIAN NATIONAL ACCOUNTS


IV. OVERSEAS TRANSACTIONS ACCOUNT
I. DOMESTIC PRODUCTION ACCOUNT
Industry (Establishments by kind of economic activity)
Agriculture, forestry fishing and hunting
Mining
Manufacturing
Construction
Transport, storage and communication
Wholesale and retail trade
etc.
II. NATIONAL INCOME AND OUTLAY ACCOUNT
Corporate trading enterprises (including public trading enterprises)
Financial enterprises (including the nominal industry)
Households (including unincorporated enterprises
General government
III. NATIONAL CAPITAL ACCOUNT
Corporate trading enterprises (including public trading enterprises)
Financial enterprises (including the nominal industry)
Households (including unincorporated enterprises
General government

Description of the accounts

The **domestic production account** is a consolidation of the production accounts of all producers regardless of sector. The production account is shown as receiving revenue from the sale of goods and services to final buyers; all intermediate goods and services are cancelled out, since they represent a cost to one producer to offset the revenue of the other. On the payments side are shown the payments of indirect taxes less subsidies, and, since the account is presented from the point of view of the producing unit, the wages and salaries paid to employees. The balance is the gross operating surplus which may be divided into consumption of fixed capital and net operating surplus. Consumption of fixed capital is carried to the national capital account (or the sector capital accounts) and net operating surplus, together with wages and salaries and indirect taxes less subsidies, is carried to the national income and outlay account (or sector income and outlay accounts). In input-output tables, the domestic production account is broken up into accounts for separate industries, and transactions associated with intermediate usage of goods and services are shown in the production accounts for the separate industries.

The **national income and outlay account** is shown as receiving wages, salaries and supplements, net operating surplus and indirect taxes less subsidies from the domestic production account. From this income are deducted net payments of income and miscellaneous transfers to overseas; the remainder is the national disposable income. The outlay side of the account shows that this disposable income is largely used for final consumption expenditure and the balance is the nation's saving. The national income and outlay account is a consolidation of the sector income and outlay accounts.

The **national capital account** is a consolidation of the sector capital accounts. It shows on the receipts side consumption of fixed capital transferred from the domestic production account and saving transferred from the national income and outlay account (or from the sector income and outlay accounts). On the payments side are shown purchases by all sectors of new buildings and capital equipment, the increase in stocks of all sectors and a balance described as net lending to overseas. This concept of net lending to overseas includes increases (and, negatively, decreases) in Australia's overseas monetary reserves. The net lending to overseas is also the balance on current transactions in the overseas transactions account.

The **overseas transactions account** records all transactions of a current nature between Australian and overseas residents. Although this is an account for the overseas sector, the items are named from the Australian viewpoint. The account shows that Australia's current receipts from overseas consist of the value of Australia's exports of goods and services, property and labour income received from overseas, unrequited transfers from overseas and extraordinary insurance claims. These receipts are used for Australia's imports of goods and services and payments of property and labour income and unrequited transfers to overseas; the balance of current receipts represents net lending to overseas. Positive net lending to overseas corresponds to a surplus on current transactions with overseas, and negative net lending corresponds to a deficit. The transactions in property income shown in this account differ from estimates shown in balance of payments statistics because, in the national accounts, undistributed company income is not imputed to the beneficial owners. For this reason, net lending to overseas differs from the balance on current account shown in balance of payments statistics.

Estimates at constant prices

In addition to providing an overview of total economic activity, the national accounts provide information on the relationships between different parts of the economy, and also on changes in individual components, and their relationships with each other over time. One of the difficulties involved in interpreting the impact of changes from one period to another is that any observed movement is generally a combination of a change in price and a change in quantity. In many cases, interest lies in the changes in physical quantity underlying the dollar value of transactions. Consequently, the development of series adjusted to remove the effect of price changes is an important extension to a national accounting system. Estimates adjusted in this way are said to be at **constant prices**, whereas national accounting aggregates expressed in terms of the actual dollar values used in transactions are said to be at **current prices**.

An estimate of the change over time in the quantity of an individual commodity produced can be made simply by collecting data on the number of units produced, but the only practicable way in which quantities of diverse goods and services produced (or used) can be aggregated is in terms of money values, such as the value of output or the value of materials used. However, changes in money values may reflect nothing more than changes in the underlying prices. Making estimates at constant (or fixed) prices is the best way of having a common unit of measurement, while avoiding the direct effects of changing prices.

The current price value of a transaction may be expressed conceptually as the product of a price and a quantity. The value of the transaction at constant prices may then be thought of as being derived by substituting, for the current price, the corresponding price in the chosen base year. Aggregates at constant prices for each period are obtained by summing constant price values of the component transactions. In effect, quantities of the commodities involved in the component transactions are combined using their prices in the base year as weights. Constant price estimates are presented in tables for gross domestic product, exports and imports of goods and services, and gross national expenditure and its principal components on page 873.

Reliability and revisions

Estimates of national income and expenditure are necessarily prepared from a very wide range of statistical information, some of which is available quickly and some of which is available only after a delay of several years. Some of it is closely related to the desired national accounting concepts, but some of it is not completely satisfactory in various respects, including coverage, concepts and timing. Estimates for the most recent years are therefore subject to revision. This applies particularly to estimates based on income tax statistics—income of companies, non-farm unincorporated enterprises, depreciation, and part of private gross fixed capital expenditure—which are subject to substantial revisions for the last couple of years because tabulations of income tax statistics become available progressively one to two years after the end of each financial year.

National income and expenditure tables

The figures shown in the following tables are consistent with data published in *Budget Related Paper No. 2, National Income and Expenditure, 1986–87* (5213.0) and *Quarterly Estimates of National Income and Expenditure, Australia, June Quarter 1987* (5206.0), except where footnoted otherwise.

DOMESTIC PRODUCTION ACCOUNT

($ million)

	1984–85	*1985–86*	*1986–87*
Final consumption expenditure—			
Private	127,013	141,919	156,422
Government	40,462	45,219	49,068
Gross fixed capital expenditure—			
Private	34,235	38,189	41,354
Public enterprises	8,874	10,528	11,249
General government	6,072	7,213	7,994
Increase in stocks	1,027	1,312	−1,252
Statistical discrepancy	1,921	3,067	4,390
Gross national expenditure	*219,604*	*247,447*	*269,225*
Exports of goods and services	34,146	38,075	42,610
Less Imports of goods and services	39,015	45,386	47,435
Expenditure on gross domestic product	**214,735**	**240,136**	**264,400**
Wages, salaries and supplements	109,380	120,292	131,272
Gross operating surplus—			
Trading enterprises—			
Companies	28,544	32,363	35,371
Unincorporated enterprises	23,902	26,794	29,291
Dwellings owned by persons	19,841	23,748	28,547
Public enterprises	7,610	8,870	9,813
General government	4,744	5,287	5,829
Financial enterprises	643	−378	−19
Less Imputed bank service charge	5,648	5,391	6,467
Gross domestic product at factor cost	*189,016*	*211,585*	*233,637*
Indirect taxes *less* subsidies	25,719	28,551	30,763
Gross domestic product	**214,735**	**240,136**	**264,400**
Gross farm product	*9,035*	*9,020*	*9,938*
Gross non-farm product	*205,700*	*231,116*	*254,462*

NATIONAL INCOME AND OUTLAY ACCOUNT

($ million)

	1984–85	*1985–86*	*1986–87*
Wages, salaries and supplements	109,380	120,292	131,272
Net operating surplus	45,883	52,592	58,698
Domestic factor incomes	*155,263*	*172,884*	*189,970*
Less Net income paid overseas	6,291	7,773	10,156
Indirect taxes	29,379	32,371	34,708
Less Subsidies	3,660	3,820	3,945
National income	*174,691*	*193,662*	*210,577*
Less Net unrequited transfers to overseas	−362	−832	−1,348
National disposable income	**175,053**	**194,494**	**211,925**
Final consumption expenditure—			
Private	127,013	141,919	156,422
Government	40,462	45,219	49,068
Saving	7,578	7,356	6,435
Disposal of income	**175,053**	**194,494**	**211,925**

NATIONAL CAPITAL ACCOUNT

($ million)

	1984–85	*1985–86*	*1986–87*
Consumption of fixed capital	33,753	38,701	43,667
Saving—			
Increase in income tax provisions	580	514	457
Undistributed income—			
Trading enterprises	−3,211	−3,819	−6,441
Financial enterprises	−1,255	−2,387	−1,479
Household saving	15,885	17,180	16,043
General government surplus on current transactions	−4,421	−4,132	−2,145
Extraordinary insurance claims paid	—	—	—
Finance of gross accumulation	**41,331**	**46,057**	**50,102**
Gross fixed capital expenditure—			
Private—			
Dwellings	10,456	11,319	10,795
Non-dwelling construction	4,798	6,589	8,229
Equipment	16,485	17,740	19,462
Real estate transfer expenses	2,496	2,541	2,868
Public enterprises	8,874	10,528	11,249
General government	6,072	7,213	7,994
Total gross fixed capital expenditure	*49,181*	*55,930*	*60,597*
Increase in stocks—			
Private non-farm	1,066	1,821	−945
Farm	−121	−164	47
Public marketing authorities	−6	−486	−601
Other public authorities	88	141	247
Statistical discrepancy	1,921	3,067	4,390
Net lending to overseas	−10,798	−14,252	−13,633
Gross accumulation	**41,331**	**46,057**	**50,102**

OVERSEAS TRANSACTIONS ACCOUNT

($ million)

	1984–85	1985–86	1986–87
Imports of goods and services	39,015	45,386	47,435
Property income to overseas	7,712	9,273	11,692
Labour income to overseas	165	196	253
Unrequited transfers to overseas—			
Personal	704	720	746
General government	950	980	947
Net lending to overseas	−10,798	−14,252	−13,633
Use of current receipts	**37,748**	**42,303**	**47,440**
Exports of goods and services	34,146	38,075	42,610
Property income from overseas	1,377	1,483	1,555
Labour income from overseas	209	213	234
Extraordinary insurance claims	—	—	—
Unrequited transfers from overseas—			
Personal	1,418	1,820	2,227
Income taxes	598	712	814
Current receipts from overseas	**37,748**	**42,303**	**47,440**

EXPENDITURE ON GROSS DOMESTIC PRODUCT AT AVERAGE 1979–80 PRICES

($ million)

	1984–85	1985–86	1986–87
Final consumption expenditure—			
Private	82,858	85,208	85,592
Government	25,520	26,710	27,162
Gross fixed capital expenditure—			
Private	22,586	22,428	21,841
Public enterprises	5,546	6,007	5,925
General government	3,729	4,025	4,145
Increase in stocks	726	690	−668
Statistical discrepancy	1,302	1,862	2,425
Gross national expenditure	*142,267*	*146,930*	*146,422*
Exports of goods and services	25,650	27,311	29,364
Less Imports of goods and services	28,286	28,308	26,963
Expenditure on gross domestic product	**139,631**	**145,933**	**148,823**
Gross farm product	*8,635*	*8,509*	*8,746*
Gross non-farm product	*130,996*	*137,424*	*140,077*

GROSS FIXED CAPITAL EXPENDITURE AND INCREASE IN STOCKS AT AVERAGE 1979–80 PRICES

($ million)

	1984–85	1985–86	1986–87
Gross fixed capital expenditure—			
Private—			
Dwellings	6,721	6,684	5,976
Non-dwelling construction	2,974	3,652	4,201
Equipment	11,324	10,678	10,263
Real estate transfer expenses	1,567	1,414	1,401
Total private	*22,586*	*22,428*	*21,841*
Public—			
Public enterprises	5,546	6,007	5,925
General government	3,729	4,025	4,145
Total public	*9,275*	*10,032*	*10,070*
Total	**31,861**	**32,460**	**31,911**
Increase in stocks—			
Private non-farm	795	1,142	−435
Farm	−89	−118	29
Public marketing authorities	−38	−423	−407
Other public authorities	58	89	145
Total	**726**	**690**	**−668**

GROSS DOMESTIC PRODUCT AT MARKET PRICES, BY INDUSTRY (*a*)
($ million)

	1975–76	*1980–81*	*1985–86*
Agriculture, forestry, fishing and hunting	3,996	7,577	9,609
Mining	3,089	8,412	15,275
Manufacturing	15,794	26,415	40,063
Electricity, gas and water	2,162	4,137	8,386
Construction	6,694	10,607	16,473
Wholesale and retail trade	13,379	21,346	37,475
Transport, storage and communication	5,622	9,692	17,162
Finance, property and business services	6,594	12,513	21,948
Public administration and defence	3,828	6,646	10,400
Community services	8,025	15,186	27,502
Recreation, personal and other services	3,044	5,247	9,574
Ownership of dwellings	4,927	11,340	26,846
Import duties	932	1,800	3,247
Less Imputed bank service charge	1,689	3,083	5,021
Total	**76,397**	**137,835**	**238,939**

(*a*) Data consistent with *Australian National Accounts: National Income and Expenditure*, 1985–86 (5204.0).

TOTAL HOUSEHOLD INCOME AND HOUSEHOLD INCOME PER HEAD: BY STATE AND TERRITORY (*a*)

	1975–76	*1980–81*	*1985–86*
TOTAL HOUSEHOLD INCOME ($ million)			
New South Wales	22,376	40,612	71,537
Victoria	16,926	29,871	53,676
Queensland	8,503	15,840	28,430
South Australia	5,431	9,188	16,231
Western Australia	5,084	9,228	16,438
Tasmania	1,591	2,883	4,888
Northern Territory	461	1,038	1,899
Australian Capital Territory	1,097	2,038	3,905
Australia	**61,469**	**110,698**	**197,004**
HOUSEHOLD INCOME PER HEAD OF MEAN POPULATION ($)			
New South Wales	4,524	7,801	12,986
Victoria	4,454	7,598	12,956
Queensland	4,104	6,877	11,066
South Australia	4,276	6,999	11,868
Western Australia	4,357	7,187	11,551
Tasmania	3,868	6,779	10,999
Northern Territory	4,822	8,564	12,962
Australian Capital Territory	5,391	9,006	15,077
Australia	**4,401**	**7,475**	**12,420**

(*a*) Data consistent with *Australian National Accounts: National Income and Expenditure*, 1985–86 (5204.0).

MAIN AGGREGATES AT CURRENT PRICES

($ million)

	1	2	3	4	5	6	7 (1 to 6)	[illegible]
	Final consumption expenditure							
Year	Private	Government	Private gross fixed capital expenditure	Public gross fixed capital expenditure	Increase in stocks	Statistical discrepancy	Gross national expenditure	Exports of goods and services
1948–49 . . .	3,060	431	538	268	45	−34	4,308	1,142
1949–50 . . .	3,525	512	700	385	54	52	5,228	1,302
1954–55 . . .	6,510	1,128	1,595	787	166	39	10,225	1,702
1959–60 . . .	9,037	1,610	2,362	1,082	168	88	14,347	2,144
1964–65 . . .	12,417	2,494	3,677	1,711	561	−32	20,828	3,041
1965–66 . . .	13,205	2,841	3,948	1,882	109	−55	21,930	3,125
1966–67 . . .	14,271	3,227	4,128	1,996	360	−113	23,869	3,472
1967–68 . . .	15,593	3,735	4,496	2,154	113	−266	25,825	3,559
1968–69 . . .	16,916	3,911	5,182	2,292	682	−124	28,859	3,882
1969–70 . . .	18,670	4,318	5,641	2,513	438	−44	31,536	4,749
1970–71 . . .	20,637	4,919	6,376	2,700	449	−206	34,875	5,065
1971–72 . . .	22,938	5,604	6,918	3,112	10	19	38,601	5,659
1972–73 . . .	25,730	6,355	7,640	3,230	−290	251	42,916	6,984
1973–74 . . .	30,421	7,953	8,979	3,757	1,171	1,078	53,359	7,847
1974–75 . . .	37,028	10,686	9,566	5,403	1,081	983	64,747	10,034
1975–76 . . .	44,256	13,212	12,062	6,331	171	−19	76,013	11,101
1976–77 . . .	50,564	15,300	14,062	6,707	1,130	−180	87,583	13,275
1977–78 . . .	56,168	17,218	15,116	7,312	−442	217	95,589	14,067
1978–79 . . .	63,297	19,025	17,787	7,703	1,284	−729	108,367	16,631
1979–80 . . .	71,424	21,360	19,785	8,605	787	−1,624	120,337	21,716
1980–81 . . .	80,905	25,025	25,190	9,364	485	−725	140,244	22,191
1981–82 . . .	92,207	28,657	29,367	11,265	1,562	−2,279	160,779	22,885
1982–83 . . .	104,435	32,432	27,131	13,178	−2,457	−965	173,754	24,685
1983–84 . . .	115,315	35,996	28,990	14,014	1,411	−696	195,030	28,010
1984–85 . . .	127,013	40,462	34,235	14,946	1,027	1,921	219,604	34,146
1985–86 . . .	141,919	45,219	38,189	17,741	1,312	3,067	247,447	38,075
1986–87 . . .	156,422	49,068	41,354	19,243	−1,252	4,390	269,225	42,610

	9	10 (7+8–9) (11+13+14)	11	12	13	14	15	16
				Gross operating surplus				
Year	Imports of goods and services	Gross domestic product	Wages salaries and supplements	Trading enterprises	Total	Indirect taxes less subsidies	National income	Household income
1948–49 . . .	979	4,471	2,167	1,822	1,876	428	3,961	3,787
1949–50 . . .	1,260	5,270	2,469	2,233	2,298	503	4,682	4,484
1954–55 . . .	1,983	9,944	4,964	3,867	4,003	977	8,720	7,929
1959–60 . . .	2,279	14,212	6,966	5,620	5,776	1,470	12,293	10,851
1964–65 . . .	3,440	20,429	10,079	8,192	8,413	1,937	17,671	15,697
1965–66 . . .	3,580	21,475	10,897	8,172	8,453	2,125	18,445	16,482
1966–67 . . .	3,664	23,677	11,912	9,189	9,514	2,251	20,346	18,274
1967–68 . . .	4,103	25,281	12,978	9,519	9,860	2,443	21,646	19,216
1968–69 . . .	4,238	28,503	14,378	11,047	11,428	2,697	24,498	21,575
1969–70 . . .	4,715	31,570	16,172	12,026	12,426	2,972	27,066	23,817
1970–71 . . .	5,070	34,870	18,563	12,596	13,086	3,221	29,841	26,618
1971–72 . . .	5,208	39,052	20,719	14,153	14,696	3,637	33,388	30,106
1972–73 . . .	5,343	44,557	23,139	16,717	17,312	4,106	38,182	34,585
1973–74 . . .	7,828	53,378	28,405	19,331	19,863	5,110	46,101	42,302
1974–75 . . .	10,289	64,492	36,530	21,102	21,744	6,218	55,087	52,596
1975–76 . . .	10,830	76,284	42,071	25,109	26,177	8,036	64,689	61,469
1976–77 . . .	13,872	86,986	47,463	29,419	30,467	9,056	73,471	70,543
1977–78 . . .	15,072	94,584	52,176	31,954	32,842	9,566	79,143	77,858
1978–79 . . .	17,843	107,155	56,095	38,674	40,000	11,060	89,687	86,879
1979–80 . . .	20,960	121,093	62,590	44,100	45,389	13,114	100,788	96,916
1980–81 . . .	24,896	137,539	72,641	48,873	49,911	14,987	114,136	110,698
1981–82 . . .	28,676	154,988	84,214	53,053	53,722	17,052	127,621	127,810
1982–83 . . .	28,518	169,921	93,423	56,077	57,123	19,375	138,238	142,052
1983–84 . . .	30,764	192,276	98,943	70,544	70,920	22,413	157,048	158,969
1984–85 . . .	39,015	214,735	109,380	79,897	79,636	25,719	174,691	176,810
1985–86 . . .	45,386	240,136	120,292	91,775	91,293	28,551	193,662	197,488
1986–87 . . .	47,435	264,400	131,272	103,022	102,365	30,763	210,577	216,858

GROSS DOMESTIC PRODUCT AT CONSTANT PRICES
($ million)

	1953–54 prices	*1959–60 prices*	*1966–67 prices*	*1974–75 prices*	*1979–80 prices (a)*
1948–49	7,538	..	..	..	32,829
1949–50	8,131	..	..	..	35,242
1950–51	8,636	..	..	..	38,214
1951–52	8,854	..	..	..	38,893
1952–53	8,780	..	..	..	39,161
1953–54	9,335	10,864	..	..	41,293
1954–55	9,818	11,506	..	..	43,067
1955–56	10,352	12,059	..	..	45,218
1956–57	10,619	12,296	..	..	46,286
1957–58	10,777	12,554	..	..	47,091
1958–59	11,710	13,478	..	..	50,139
1959–60	12,377	14,212	17,027	..	52,897
1960–61	..	14,642	17,559	..	54,141
1961–62	..	14,830	17,781	..	55,283
1962–63	..	15,774	18,972	..	58,495
1963–64	..	16,952	20,301	..	62,516
1964–65	..	18,242	21,738	..	66,577
1965–66	..	18,515	22,210	..	68,303
1966–67	..	20,099	23,677	44,041	72,550
1967–68	..	..	24,609	45,660	75,400
1968–69	..	..	26,761	49,959	81,531
1969–70	..	..	28,388	52,744	86,312
1970–71	..	..	29,657	55,344	91,154
1971–72	..	..	31,060	58,079	96,025
1972–73	..	..	32,522	60,332	100,304
1973–74	..	..	33,995	63,258	104,466
1974–75	..	..	34,561	64,492	106,483
1975–76	..	..	..	66,267	109,475
1976–77	..	..	..	68,223	112,348
1977–78	..	..	..	68,604	113,343
1978–79	..	..	..	71,827	119,048
1979–80	..	..	..	73,622	121,093
1980–81	..	..	..	..	124,602
1981–82	..	..	..	..	127,248
1982–83	..	..	..	..	126,016
1983–84	..	..	..	..	132,624
1984–85	..	..	..	..	139,631
1985–86	..	..	..	..	145,933
1986–87	..	..	..	..	148,823

(a) Estimates prior to 1969–70 have been derived from estimates valued at the average prices of an earlier base year. A description of the methods used is presented in Appendix C of the 1985–86 edition of *Australian National Accounts: National Income and Expenditure* (5204.0).

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CHAPTER TWENTY-SIX

FOREIGN TRANSACTIONS

This chapter includes statistics of foreign trade, balance of payments, foreign investment by private investors; and foreign ownership and control of enterprises in Australia.

AUSTRALIA'S FOREIGN TRADE—AN HISTORICAL SUMMARY

The following tables show Australian trade (including gold) with overseas countries from the earliest date for which reasonably reliable records are available. Some of the problems which arose in compiling the early figures are noted below.

Records of past years

Before Federation, each State recorded its trade independently and the only available means of ascertaining the total trade of Australia for those years is by aggregating the records of the States. However, the results are subject to error, as the past records of values and direction of trade are not on uniform lines. The figures in the following tables for years prior to Federation have been carefully compiled and may be taken as representative of the overseas trade of Australia as a whole.

Currency

All values in the following tables are in Australian dollars f.o.b. Values for years prior to 1966 were converted from pounds to Australian dollars at the rate of one pound equals two dollars.

The trade year

Before 1 July 1914, statistics relating to overseas trade were shown on a calendar year basis. From that date on, the statistics relate to the financial year ending 30 June.

Ships' stores and ships imported and exported

Prior to 1906, goods loaded in Australian ports on board overseas ships as ships' stores were included in general exports. From 1906 onward, stores were specially recorded as such and omitted from exports. However, ships' stores were again included in total export statistics commencing in July 1982 following a United Nations Statistical Commission recommendation. The imports and exports of ships were not recorded prior to 1905.

Total foreign trade

Table 1 shows the total trade of Australia with overseas countries. The period 1826 to 1975 has been divided into ten-yearly periods and the figures shown represent the annual averages of the periods specified. Figures for individual years can be found in *Year Book* No. 35 and earlier issues but it should be noted that in those issues imports are shown in British currency. Figures given here for the early years are only approximations of the actual figures.

Imports and exports by commodity groupings

Tables 2 and 3 show imports and exports by selected commodity groups. Figures are given for selected years at ten-yearly intervals from 1902 to 1982 and for each year thereafter. Commodity data are not available in a viable form before Federation. In July 1965, the Statistical Classification of Imports was replaced by the Australian Import Commodity Classification, so commodity data after that date are not directly comparable with data classified according to the old classification.

Trade with selected countries

Tables 4 and 5 show the value and percentage of trade with selected overseas countries. Figures for years prior to 1902 are the averages for the periods indicated; subsequent figures are for selected years at ten-yearly intervals up to 1982 and for each year thereafter.

TABLE 1: VALUE OF IMPORTS AND EXPORTS AT CURRENT PRICES (1826–1987) AND CONSTANT PRICES (1972–1987)

($ million)

	Total imports		*Total exports*		*Excess of exports (+) or imports (−)*	
Year ended 30 June—	*Current prices*	*Constant prices (a)*	*Current prices*	*Constant prices (a) (b)*	*Current prices*	*Constant prices (a)*
1826–1835	1.6		0.8		−0.8	
1836–1845	3.8		2.5		−1.3	
1846–1855	13.0		13.7		+0.7	
1856–1865	35.4		34.7		−0.7	
1866–1875	37.0		43.7		+6.7	
1876–1885	54.1		51.8		−2.3	
1886–1895	56.4		60.3		+3.9	
1896–1905	66.4		92.3		+25.9	
1906–1915	113.6		143.8		+30.2	
1916–1925	216.0		249.6		+33.6	
1926–1935	193.1		252.3		+59.2	
1936–1945	393.7		325.8		−67.9	
1946–1955	1,104		1,246		+142	
1956–1965	1,950		2,036		+86	
1966–1975	4,304		4,742		+438	
1976	8,241	13,035	9,640	14,769	+1,399	+1,734
1977 (*c*)	10,330	14,564	11,489	16,202	+1,159	+1,638
1978	11,082	13,666	12,050	16,478	+968	+2,812
1979	13,651	15,765	14,071	17,298	+420	+1,533
1980	16,045	16,102	18,606	18,610	+2,561	+2,508
1981	18,790	17,389	18,949	17,652	+159	+263
1982	22,767	20,313	19,294	17,807	−3,473	−2,506
1983	21,216	17,420	21,454	18,194	+238	+774
1984	23,540	18,929	24,013	19,303	+473	+374
1985	29,049	21,347	29,708	22,234	+659	+887
1986	34,691	21,896	32,818	23,680	−1,873	+1,784
1987(*p*)	37,092	21,220	35,725	25,143	−1,367	+3,923

(*a*) Constant Price Values are based on average 1979–80 prices. (*b*) Constant Price Value exports for 1983 and later years exclude stores taken on by international vessels. (*c*) Total imports and exports at current prices exclude non-merchandise trade from the commencement of the year ended 30 June 1977 in this table.

TABLE 2: VALUE OF IMPORTS BY SELECTED COMMODITY GROUPS

($ million)

Year ended 30 June	Vegetable, foodstuffs	Apparel, etc.	Oil, etc.	Metals, etc.	Rubber	Paper, etc.	Other	Total
1902	7.2	21.8	2.4	15.6	1.0	3.2	24.8	76.0
1912	7.4	32.4	3.2	28.0	2.8	5.2	43.0	122.0
1922	8.0	62.0	9.4	45.6	3.4	8.8	50.8	188.0
1932	5.2	30.8	11.0	14.8	1.6	8.8	31.8	104.0
1942	12.3	65.3	32.4	143.6	6.0	8.7	79.7	348.0
1952	50.1	407.1	174.9	768.8	68.0	137.5	500.6	2,107.0
1962	56.3	208.4	219.8	630.3	35.5	109.6	509.1	1,769.0

Year ended 30 June	Food and live animals	Beverages and tobacco	Crude materials, inedible, except fuels	Minerals, fuels, lubricants, etc.	Animal and vegetable oil and fat	Chemicals	Manufactured goods	Machinery and transport equipment	Miscellaneous manufactured equipment	Other	Total(a)
1972	160	51	219	194	15	410	856	1,483	432	188	4,008
1982	732	173	769	3,002	80	1,828	3,856	9,357	2,681	289	22,767
1983	836	184	648	3,098	82	1,776	3,446	8,022	2,734	391	21,216
1984	1,015	196	762	2,218	111	2,157	3,984	9,309	3,119	668	23,540
1985	1,247	225	932	2,299	112	2,549	4,919	11,900	3,866	1,000	29,049
1986	1,418	298	1,023	1,927	94	3,024	5,620	15,141	4,669	1,477	34,691
1987(*p*)	1,613	327	1,084	1,747	91	3,471	6,186	15,434	5,185	1,953	37,092

(*a*) From the commencement of the year ended 30 June 1982, non-merchandise trade is excluded from total imports.

TABLE 3: VALUE OF EXPORTS BY SELECTED COMMODITY GROUPS

($ million)

Year ended 30 June	Coal	Wool	Wheat	Meat	Sugar	Ores and concentrates		Barley	Petroleum products	Lead and lead alloys	Other	Total(a)
						Iron	Other					
1902(b)	n.a.	30	6	5	—	—	—	n.a.	n.a.	n.a.	59	100
1912	2	52	13	9	—	—	8	—	—	3	71	158
1922	2	96	57	11	—	—	1	1	—	4	84	256
1932	1	74	3	13	5	—	—	3	—	5	112	216
1942	1	112	9	28	5	—	2	—	—	14	167	338
1952	1	636	111	71	14	—	40	22	—	52	403	1,350
1962	27	720	285	179	68	—	48	30	25	38	735	2,155
1972	238	633	419	569	211	376	226	73	45	68	2,035	4,893
1982	2,289	1,913	1,720	1,292	764	1,252	2,131	241	551	264	6,877	19,294
1983	3,073	1,807	1,440	1,585	557	1,487	2,206	131	1,153	302	7,713	21,454
1984	3,328	1,968	1,814	1,309	621	1,619	2,077	457	1,226	310	9,284	24,013
1985	4,654	2,454	2,857	1,288	575	1,835	2,325	592	1,155	251	11,722	29,708
1986	5,212	2,978	2,969	1,608	616	1,936	2,496	537	1,124	281	13,061	32,818
1987(p)	5,426	3,760	2,141	2,140	634	1,753	2,507	254	836	291	15,983	35,725

(a) From the commencement of the year ended 30 June 1982, non-merchandise trade is excluded from total exports. (b) n.a.—not available separately, but included in 'Other'.

TABLE 4: IMPORTS, VALUE BY SELECTED COUNTRIES

Year ended 30 June	Canada		France		Federal Republic of Germany (a)		India		Japan		New Zealand		United Kingdom		U.S.A.		Other		Total (b)
	$m	% of total	$m	% of total	$m	% of total	$m	% of total	$m	% of total	$m	% of total	$m	% of total	$m	% of total	$m	% of total	$m
1887–1891	0.2	0.3	0.7	1.0	2.3	3.6	1.4	2.1	—	0.1	3.3	5.2	45.1	70.1	4.1	6.4	7.2	11.2	64.3
1892–1896	0.2	0.4	0.4	0.8	2.0	4.3	1.1	2.4	0.1	0.2	2.0	4.3	33.2	70.9	3.1	6.5	4.7	10.1	47.0
1897–1901	0.4	0.6	0.9	1.3	4.1	6.2	1.7	2.5	0.4	0.6	2.8	4.2	41.5	62.8	7.9	12.0	6.5	9.8	66.0
1902	0.6	0.8	0.9	1.2	5.0	6.6	3.0	4.0	0.5	0.7	3.2	4.2	45.2	59.5	10.5	13.8	7.0	9.2	76.0
1912	1.6	1.3	3.5	2.9	11.2	9.2	3.5	2.9	1.6	1.3	4.6	3.8	61.1	50.1	16.8	13.8	17.9	14.7	122.0
1922	5.8	3.1	5.1	2.7	0.2	0.1	6.8	3.6	6.6	3.5	3.2	1.7	96.6	51.4	34.4	18.3	29.3	15.6	188.0
1932	3.4	3.3	2.8	2.7	3.4	3.3	6.8	6.5	5.8	5.6	1.7	1.6	42.2	40.6	17.1	16.4	20.8	20.0	104.0
1942	20.9	6.0	n.a.	n.a.	—	—	26.1	7.5	1.0	0.3	2.4	0.7	133.6	38.4	106.1	30.5	57.8	16.6	348.0
1952	27.1	1.3	44.8	2.1	65.4	3.1	95.6	4.5	87.2	4.1	14.8	0.7	931.4	44.2	218.3	10.4	622.2	29.5	2,106.8
1962	68.3	3.9	22.2	1.3	103.7	5.9	32.1	1.8	99.0	5.6	27.1	1.5	531.8	30.1	348.2	19.7	536.6	30.3	1,769.0
1972	138.1	3.4	69.1	1.7	292.4	7.3	35.2	0.9	628.6	15.7	112.3	2.8	836.1	20.9	872.6	21.8	1,024.0	25.5	4,008.4
1982	584.9	2.5	628.1	2.7	1,355.7	5.9	118.8	0.5	4,527.4	19.7	726.2	3.2	1,649.2	7.2	5,249.3	22.8	8,165.1	35.5	23,004.7
1983	434.6	2.0	454.8	2.1	1,298.6	6.0	142.3	0.7	4,506.3	20.7	694.3	3.2	1,466.9	6.7	4,766.4	21.9	8,041.8	36.9	21,806.0
1984	451.6	1.9	506.0	2.1	1,376.2	5.8	119.1	0.5	5,337.6	22.7	910.2	3.9	1,603.2	6.8	5,043.8	21.4	8,192.6	34.8	23,540.3
1985	606.4	2.1	558.9	1.9	1,811.6	6.2	169.1	0.6	6,608.6	22.7	1,104.2	3.8	1,961.6	6.8	6,425.9	22.1	9,803.1	33.7	29,049.4
1986	691.2	2.0	776.1	2.2	2,743.2	7.9	170.5	0.5	8,248.3	23.8	1,454.4	4.2	2,515.6	7.3	7,283.7	21.0	10,808.2	31.2	34,691.2
1987(p)	750.8	2.0	825.0	2.2	2,784.9	7.5	203.4	0.5	7,744.9	20.9	1,431.2	3.9	2,766.5	7.5	8,118.7	21.9	12,466.2	33.6	37,091.6

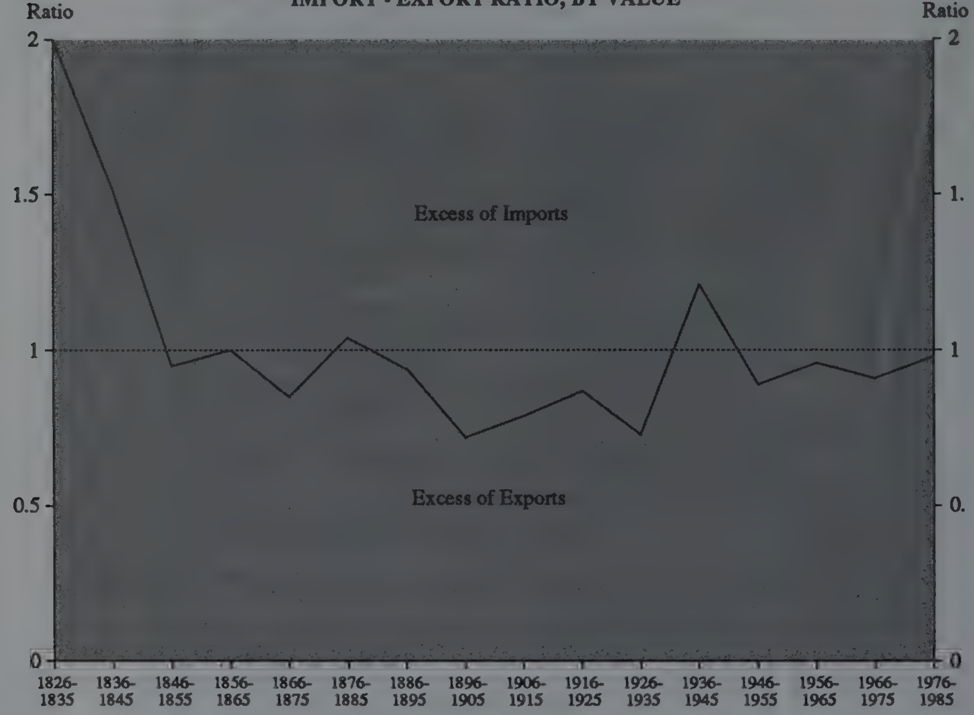
(a) Prior to 1955 includes German Democratic Republic. (b) From the commencement of the Year ended 30 June 1984, non-merchandise trade is excluded from total imports.

TABLE 5: EXPORTS, VALUE BY SELECTED COUNTRIES

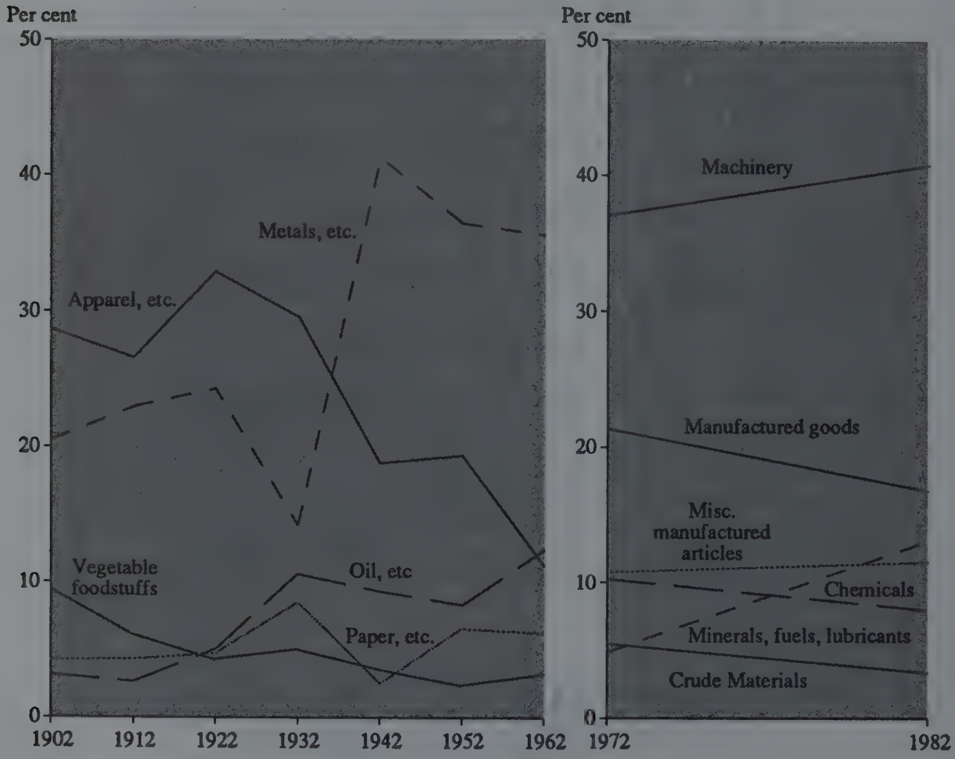
Year	China, People's Republic of (a)		France		Federal Republic of Germany (b)		Italy		Japan		New Zealand		U.K.		U.S.A.		U.S.S.R.		Other		Total (c)
	$m	% of total	$m	% of total	$m	% of total	$m	% of total	$m	% of total	$m	% of total	$m	% of total	$m	% of total	$m	% of total	$m	% of total	$m
1887–1891	0.1	0.2	1.2	2.3	1.0	1.9	—	0.1	—	—	1.4	2.5	40.0	74.7	3.0	5.6	n.a.	n.a.	6.6	12.4	53.5
1892–1896	—	0.1	3.8	6.2	2.9	4.8	0.1	0.1	0.1	0.1	1.8	3.0	41.9	69.7	2.3	3.8	n.a.	n.a.	7.3	12.1	60.1
1897–1901	0.4	0.5	4.8	5.9	3.9	4.8	0.3	0.4	0.2	0.3	2.1	2.6	46.1	57.0	7.2	8.9	n.a.	n.a.	15.8	19.6	80.8
1902	0.3	0.3	5.0	5.0	5.1	5.1	0.3	0.3	0.2	0.2	2.9	2.9	50.4	50.4	6.7	6.7	n.a.	n.a.	29.1	29.1	100.0
1912	0.4	0.2	16.0	10.2	14.9	9.4	1.2	0.8	2.3	1.5	4.5	2.8	62.9	39.8	4.1	2.6	n.a.	n.a.	51.9	32.8	158.0
1922	1.0	0.4	17.4	6.8	8.0	3.1	16.1	6.3	15.9	6.2	9.2	3.6	115.5	45.2	16.6	6.5	n.a.	n.a.	56.0	21.9	256.0
1932	9.9	4.6	9.3	4.3	7.8	3.6	7.3	3.4	23.3	10.8	5.2	2.4	115.5	53.4	8.2	3.8	0.4	0.2	29.5	13.6	216.0
1942	0.5	0.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.7	0.5	13.7	4.1	86.5	25.6	115.7	34.2	1.9	0.6	118.0	34.9	338.0
1952	0.6	—	115.8	8.6	40.8	3.0	76.0	5.6	97.0	7.2	74.6	5.5	416.3	30.8	154.4	11.4	n.a.	n.a.	374.5	27.7	1,350.0
1962	131.9	6.1	104.1	4.8	81.7	3.8	104.4	4.8	373.8	17.4	117.5	5.5	412.7	19.2	218.0	10.1	23.5	1.1	587.0	27.3	2,155.0
1972	37.3	0.8	127.9	2.6	149.8	3.1	89.4	1.8	1,360.2	27.8	277.1	5.7	449.2	9.2	615.3	12.6	82.8	1.7	1,704.0	34.8	4,893.0
1982	602.5	3.1	400.0	2.0	465.3	2.4	393.3	2.0	5,351.4	27.3	1,035.9	5.3	726.4	3.7	2,154.5	11.0	666.2	3.4	7,779.7	39.7	19,575.2
1983	643.8	2.9	495.3	2.2	548.6	2.5	368.4	1.7	5,975.7	27.0	1,155.5	5.2	1,181.3	5.3	2,241.1	10.1	507.0	2.3	9,006.4	40.7	22,123.1
1984	612.7	2.6	479.8	2.0	636.9	2.7	479.0	2.0	6,527.0	27.2	1,386.3	5.8	1,106.8	4.6	2,590.0	10.8	583.1	2.4	9,610.9	40.0	24,012.5
1985	1,061.8	3.6	669.8	2.3	722.1	2.4	581.3	2.0	7,986.7	26.9	1,541.6	5.2	923.0	3.1	3,457.8	11.6	834.4	2.8	11,929.8	40.2	29,708.3
1986	1,497.4	4.6	708.1	2.2	881.4	2.7	686.6	2.1	9,325.7	28.4	1,505.2	4.6	1,150.8	3.5	3,249.3	9.9	969.7	3.0	12,843.4	39.1	32,817.6
1987(*p*)	1,586.3	4.4	909.3	2.5	1,100.0	3.1	823.7	2.3	9,115.6	25.5	1,777.3	5.0	1,373.5	3.8	4,195.1	11.7	687.7	1.9	14,156.3	39.6	35,724.8

(*a*) Prior to 1949 includes Formosa. (*b*) Prior to 1955 includes German Democratic Republic. (*c*) From the commencement of the Year ended 30 June 1984, non-merchandise trade is excluded from total exports.

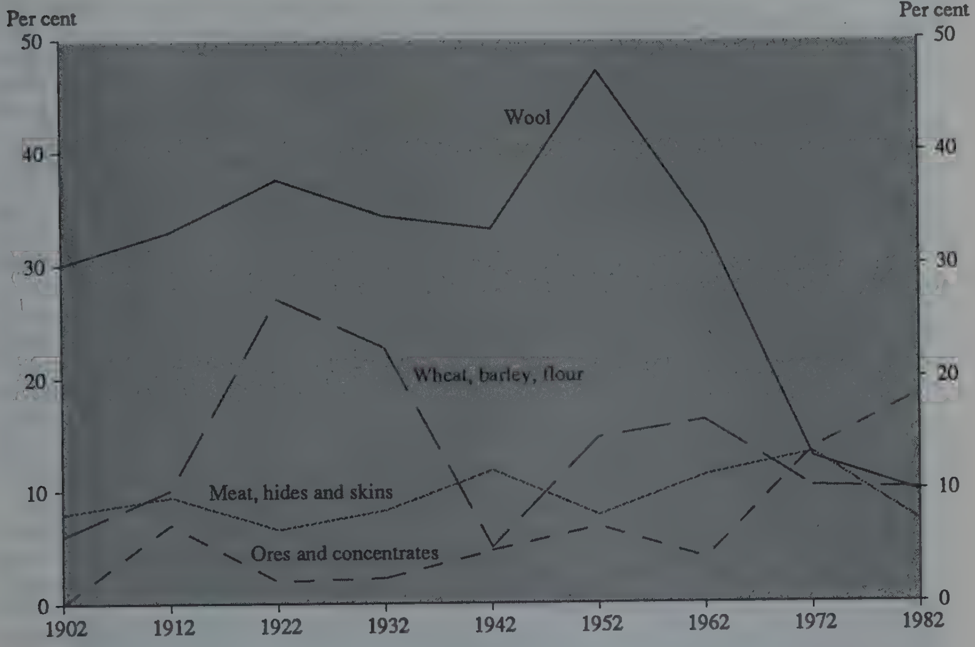
IMPORT - EXPORT RATIO, BY VALUE



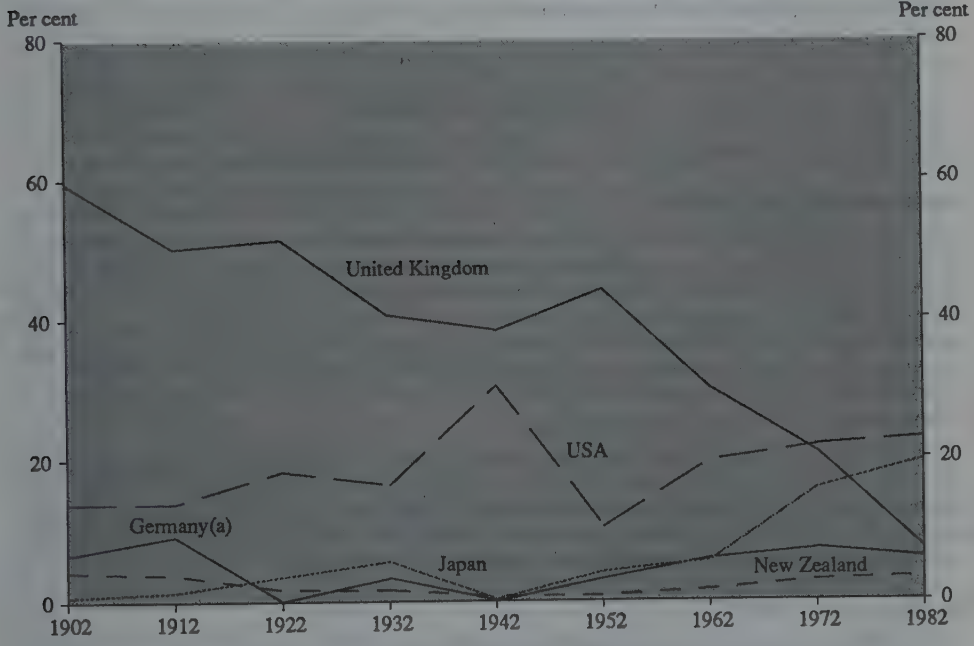
IMPORTS, SELECTED COMMODITY GROUPS, PER CENT OF VALUE



EXPORTS, SELECTED COMMODITY GROUPS, PER CENT OF VALUE

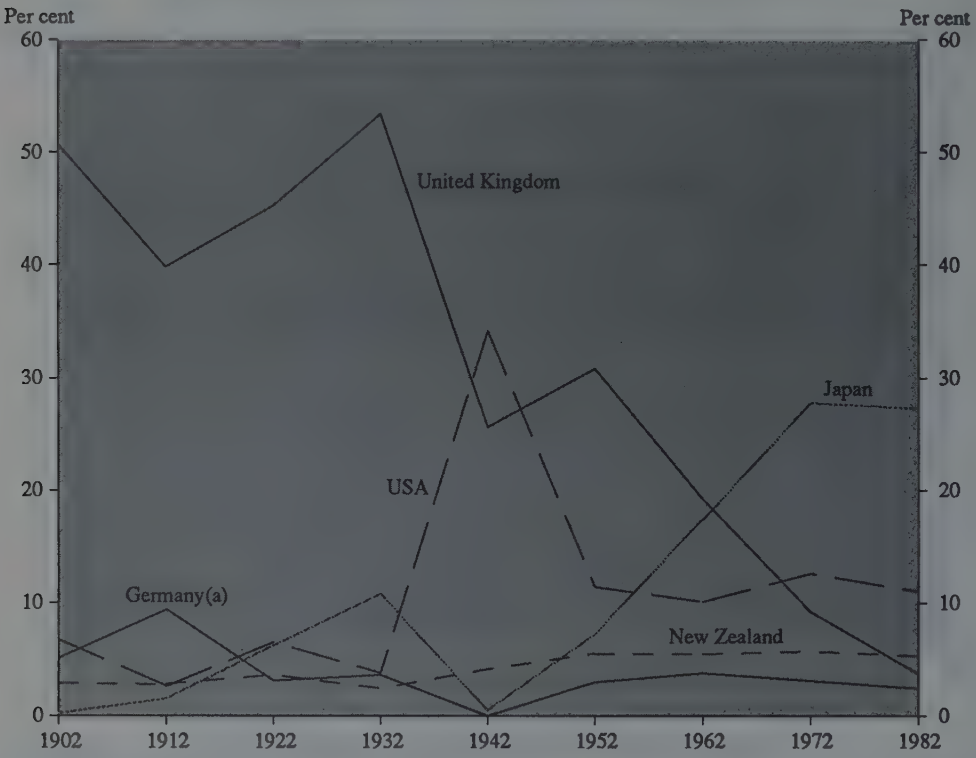


IMPORTS, SELECTED COUNTRIES, PER CENT OF VALUE



(a) Prior to 1955 includes German Democratic Republic.

EXPORTS, SELECTED COUNTRIES, PER CENT OF VALUE



(a) Prior to 1955 includes German Democratic Republic.

FOREIGN TRADE

Constitutional provisions and legislation

Constitutional provisions

By the Commonwealth of Australia Constitution Act, section 51 (1), the power to make laws with respect to trade and commerce with other countries was conferred on the Australian Parliament. Under section 86 of the Constitution, the collection and control of duties of customs and excise was passed to the Executive Government of the Commonwealth on 1 January 1901. Other references to trade and commerce are contained in sections 87 to 95 of the Constitution.

Commonwealth Government legislation

Commonwealth Government legislation affecting foreign trade includes the *Customs Act 1901*, the *Customs Tariff Act 1987* and the *Customs Tariff (Anti-Dumping) Act 1975*. The Customs Tariff Act provides the statutory authority for imposing the actual rates of duty operative from time to time, while the Customs Tariff (Anti-Dumping) Act provides protection for Australian industry against various forms of unfair trading.

The Customs Tariff

The first *Australian Customs Tariff* was introduced by Resolution on 8 October 1901, from which date uniform duties came into effect throughout Australia. The *Australian Customs Tariff* was developed in a period when government industry policy was influenced by a desire to protect Australian industries from import competition. More recently however, governments have held the view that for Australia to maximise its national income, it must encourage industries which are capable of operating under lower levels of protection. While customs collections are still a major source of revenue, the reliance on tariffs as an industry assistance measure is diminishing, with more emphasis being placed on measures which actively assist industry to improve its efficiency.

On 1 January 1988 Australia introduced a new Tariff based on the Customs Co-operation Council Convention on the Harmonized Commodity Description and Coding System.

The customs value of imported goods is established in accordance with the principles of Article VII of the General Agreement on Tariffs and Trade. This system is given effect by Section 154-Section 161 (D) of the Customs Act. The system provides several methods of valuing goods for Customs purposes as provided in Section 157 (1)-Section 157 (8).

In an unconditional sale, the customs value of imported goods will be based as far as possible on the transaction value method. This method provides for the acceptance of the price actually paid or payable to the vendor, provided sufficient and reliable information is available for this purpose. This price may be subject to adjustments vide Section 154 (2) and Section 159 (3). If there is no price paid or payable, or the price is unacceptable, the other valuation methods must be attempted sequentially.

Rates of duty

The *Customs Tariff Act 1987* provides for three distinct types of rates. *General rates.* These are set out in Schedule 3 to the Customs Tariff Act and apply to goods from all countries that do not qualify for either Special rates of duty or Concessional rates of duty for a particular tariff classification.

Special rates: These are set out in Schedule 3 to the Customs Tariff Act and apply to goods, the produce or manufacture of specified countries being:

- *Forum Island Countries.* These countries are set out in Part I of Schedule 1 to the Customs Tariff Act and preference is given to goods the subject of the South Pacific Regional Trade and Economic Co-operation Agreement (SPARTECA).
- *Developing Countries.* Those countries set out in Part II of Schedule 1.
- *Papua New Guinea.* The rates of duty are set out in Schedule 3 to the Customs Tariff Act and preference is given to goods the subject of the Papua New Guinea/Australia Trade and Commercial Relations Agreement (PATCRA). Wherever PNG is not mentioned in Schedule 3, goods take a FREE rate of duty.
- *New Zealand.* The rates of duty are set out in Schedule 3 to the Customs Tariff Act and preference is given to goods the subject of the Australia/New Zealand Closer Economic Relations—Trade Agreement (ANZCERTA). Where New Zealand is not mentioned in Schedule 3, goods take a FREE rate of duty.
- *Canada.* The rates of duty are set out in Schedule 3 to the Customs Tariff Act and preference is given to goods the subject of the Canada/Australia Trade Agreement (CANATA).

Concessional rates. The rates of duty are set out in Schedules 4 and 5 to the Customs Tariff Act:

- Schedule 4, applies to Special Concessional rates of duty and is applicable to imports from all sources complying with particular ownership or other provisions.
- Schedule 5, contains all rates of duty both normal and concessional, for goods subject to tariff quotas.

Import controls

The effects of the world-wide recession in the early 1970s necessitated the imposition of import controls over particular commodities to protect employment and investment in some important Australian industries. At present, the textile, clothing and footwear, motor vehicle and cheese industries are assisted by tariff quotas, while imports of certain used, secondhand or disposals earthmoving, excavating and materials handling equipment and certain used, secondhand and disposals four-wheel drive vehicles are subject to import licensing controls.

The decision to impose controls either in the form of import licensing or tariff quotas is made by the Commonwealth Government based on the recommendations of the Industries

Assistance Commission after inquiry into the industry. Both forms of control are usually applied on a global basis and are intended to provide short term assistance to an industry but there are significant differences in their application.

Import licensing is a non-tariff form of protection that imposes an absolute restriction on the quantity, weight or value (as appropriate) of the goods that may be imported in a certain period. Goods imported without a licence cannot be entered for home consumption and may be subject to seizure as prohibited imports. The legal basis for import licensing is the Customs (Import Licensing) Regulations prescribed under the Customs Act.

In respect of goods subject to tariff quotas, by-laws are made pursuant to Section 271 of the Customs Act and Determinations are made pursuant to Section 273. These allow goods to be imported and cleared for home consumption at normal rates of customs duty up to a ceiling level specified by the government for a particular period . Additional temporary (or penalty) duties are applied to goods entered for home consumption outside the quota arrangements.

The Customs (Prohibited Imports) Regulations, as prescribed under Section 50 of the Customs Act, list those commodities which are prohibited absolutely, or restricted, on social grounds. Other items are restricted on health grounds (human, animal or plant) by the *Quarantine Act 1908*, the *Therapeutic Goods Act 1966*, and the *Wildlife Protection (Regulation of Exports and Imports) Act 1982*; and sundry allied Commonwealth and State legislation.

Export controls

Section 112 of the *Customs Act 1901* provides that the Governor-General may, by regulation, prohibit the exportation of goods from Australia and that this power may be exercised by:

(a) prohibiting the exportation of goods absolutely;
(b) prohibiting the exportation of goods to a specified place; or
(c) prohibiting the exportation of goods unless prescribed conditions or restrictions are complied with. Goods subject to this export control are listed in the Customs (Prohibited Exports) Regulations.

Export prohibitions may also be imposed under the Export Control Act administered by the Department of Primary Industries and Energy, the Wildlife Protection (Regulation of Exports and Imports) Act administered by the Department of Arts, Sport, the Environment, Tourism and Territories; the Quarantine Act; and sundry allied Commonwealth and State legislation.

Exchange control

Up to 25 June 1984, control over goods exported from Australia was maintained under the Banking (Foreign Exchange) Regulations to ensure that the full proceeds from the sale of such goods were received into the Australian banking system. However, as part of the general relaxation of exchange controls announced by the Government and applying from 25 June 1984, controls in respect of export proceeds were removed completely.

Trade descriptions

The Commerce (Trade Descriptions) Act 1905, administered by the Australian Customs Service, gives power to require the application of a proper trade description to certain prescribed goods imported into or exported from Australia. Goods which must bear a prescribed trade description upon importation into Australia are specified in the Commerce (Imports) Regulations. With regards to exports from Australia, marking requirements are prescribed in regulations issued under the Act and in relation to specified export commodities.

Export integration—EXIT

The Australian Customs Service is developing an electronic communication network (EXIT) to integrate export documentation procedures involving Customs, other government agencies with responsibility for controlling exports, ABS, exporters and freight carriers. The EXIT communication network will streamline the recording and reporting of export cargo.

Australian Trade Commission

The Australian Trade Commission (Austrade) was formed in January 1986 to provide a wide range of services to exporters. Functions taken over by the new authority were formerly carried out by the Trade Commissioner Service, the Export Development Grants Board, the Export Finance and Insurance Corporation, the Australian Overseas Projects Corporation and the marketing and promotion elements of the Department of Foreign Affairs and Trade.

The objectives of Austrade are to improve export performance by motivating industry to become more export oriented, to facilitate export marketing and to advocate an improved environment for export.

Austrade has offices in all capital cities, Wollongong, Newcastle, Geelong and Townsville. Offices are also located in all major overseas trading countries and in many other countries with representation by Australian Trade Correspondents and Marketing Officers.

Export finance and insurance

Austrade provides direct loans to overseas borrowers for the purchase of Australian capital goods and services. It also offers guarantees to lending institutions which finance Australian exporters, or who make loans to overseas borrowers.

Insurance services are provided to cover Australian exporters of goods and services against non-payment and against unfair calling of bonds and guarantees. Indemnities are provided to financial institutions or insurers providing bonds or guarantees to overseas buyers. Insurance is also provided to Australian firms against political risks associated with their overseas investments.

Export incentives

Austrade is an export incentive scheme in the form of cash grants based on eligible expenditure for such overseas activities as market research, fares, representation, advertising and the cost of participating in overseas trade displays.

The Export Market Development Grants Scheme aims to encourage Australian exporters to seek out and develop overseas markets for goods, specified services, industrial property rights and know-how which are substantially of Australian origin. Grants are determined on the basis of 70 per cent of eligible expenditure in excess of $5,000, and are subject to a maximum of $200,000 in any one grant year.

As an incentive to new small exporters, Austrade services are provided free of charge and special assistance is provided to high technology exports. In recognition of achievement, Austrade runs an annual program of export awards.

Overseas projects

Austrade assists Australian businesses to obtain contracts associated with overseas projects. Specialist Trade Commissioners are stationed at strategic global locations to keep Australian businesses informed on developments. They identify project opportunities and provide early warning of project proposals and priorities. Austrade can also undertake a project and finance packaging role for consortia of Australian companies in bidding for overseas projects.

Overseas services

Through its overseas network, based upon the Trade Commission Service, Austrade is able to channel information on commercial opportunities direct to Australian companies. Trade Commissioner offices employ local staff who are expert in the language and marketing system of the countries in which they are located.

The overseas offices provide advice on commercial opportunities and economic developments and can assist in making representations to governments on such matters as tariffs, quarantine requirements or industrial standards. They can also help to resolve trade disputes.

The Trade Commissioners provide advice on agents, distribution systems and marketing techniques and for a fee can carry out market research or other client specific services.

A brief account of the origins of the Trade Commissioner Service is available in *Year Book* No. 51.

Trade displays

Austrade arranges participation at trade fairs, exhibitions and displays throughout the world. Australian exporters are encouraged to use the displays as an opportunity to make direct sales, obtain new markets, negotiate contracts and gauge market reaction to Australian products and services. Austrade provides space and a co-ordinated stand design and pays half of all direct costs of mounting a display including expenses of design, space rental, construction and publicity.

Overseas publicity

To create an awareness of Australian goods and services in overseas markets, Austrade undertakes advertising and publicity including direct mail and targeted trade media publicity. Special publications in English and other languages are produced. Product information is distributed to leading journals and newspapers in addition to direct advertising.

Trade missions and buying visits

Trade missions for specific industries or groups of firms and survey missions designed to explore prospects in new or developing areas are arranged regularly. Austrade also co-ordinates a program of visits to Australia by overseas buyers.

Foreign trade relations

Trade policy

As a major producer of a wide range of minerals and agricultural commodities, the Australian economy is very dependent on international trade. Australia is a major exporter of coal, iron ore, bauxite, alumina, manganese, nickel, mineral sands, diamonds, uranium, natural gas, wool, meat, wheat, and sugar. Imports of capital equipment form a high proportion of total imports. There is a large market for imported manufactured goods even though Australia has extensive manufacturing industry. Trade in services is heavily imbalanced in favour of the rest of the world.

Australia is dependent on stable international trade markets for commodities, and trade policy objectives include:

- maintaining of an open international trade and payments system
- maintaining of an equitable framework of multilateral rules based on non-discrimination, predictability and transparency which provides for progressive trade liberalisation
- ensuring fair and reasonable access to markets for agricultural products, restraints on subsidised competition in third world markets and stability in commodity markets
- achieving fair and stable prices for minerals and market security
- promoting of employment through increased exports in general and increased exports of manufactures and services in particular.

Further, Australia maintains a substantial involvement in the General Agreement on Tariffs and Trade (GATT), the Organisation for Co-operation and Development (OECD) and the United Nations Conference on Trade and Development (UNCTAD). It also participates in the activities of a number of international bodies responsible for trade in particular commodities.

In relation to trade with particular countries, Australia has representation in all major markets and has bilateral trade agreements with many of the major trading partners. The agreements normally provide for reciprocal favoured nation treatment for imports, close consultation on trade matters and, in many instances, the operation of a joint committee or commission. In some cases the agreements also embrace industrial and technical co-operation and business investment. (Some details of agreements with particular countries are included in the 1986 and earlier issues of the *Year Book*).

General Agreement on Tariffs and Trade—GATT

The GATT is an international treaty which provides a framework for the conduct of world trade. The GATT provides a forum for resolution of trade problems and its objective is to liberalise world trade, leading to general economic growth and development.

The most recently completed round of negotiations under the GATT was the Tokyo Round (1973–79). In summary, the agreements reached included codes of conduct on subsidies and countervailing duties, government procurement, customs valuation, standards, import licensing, anti-dumping and trade in civil aircraft.

Australia, along with other developed country contracting parties to the GATT, has introduced tariff preferences for developing countries under the Generalised System of Preferences (GSP). These preferences are unilateral, non-reciprocal and non-contractual. Accordingly, Australia reserves the right to modify, withdraw, suspend or limit the preferences especially where there is injury to domestic producers. Margins of preference are generally 10 to 15 per cent below the General Tariff rate.

The eight Round of GATT trade negotiations was launched at Punta del Este in Uruguay during 1986. Australia is making a substantial commitment to the success of the Uruguay Round. As well as covering merchandise trade this round will encompass trade in services.

In recent years world trade in many agricultural commodities has been in crisis due to factors largely beyond Australian control. At the beginning of the Uruguay Round, Australia sought a stronger voice by initiating the Cairns Group of Fair Traders in Agriculture. The group comprising fourteen developed and undeveloped countries has common interest in securing a more stable trade environment for agricultural products. The main objectives for Australia in the Uruguay Round are to reduce agricultural subsidies and agricultural market entry restriction, to improve the rules on the use of subsidies and protection, to reduce protection affecting Australian exports, to make the GATT disputes settlement mechanisms more effective and to devise rules to keep services trade policies fair.

Organisation for Co-operation and Development—OECD

In association with other members of the OECD, a communiqué was issued following the Ministerial Council Meeting in May 1987 which adopted principles and actions covering both domestic and international agricultural policy. This reflected many of the points put forward by the Prime Minister in his statement on 'Resolving the World Agricultural Crisis' made earlier at the European Management Forum in February 1987.

United Nations Conference on Trade and Development—UNCTAD

Australia actively participated in UNCTAD to achieve an outcome to its Seventh Session in July 1987 which reinforces the GATT agricultural trade objectives. Australia has advanced specific proposals for UNCTAD work to complement work in the GATT Uruguay Round. In particular, at the 33rd session of the UNCTAD Trade and Development Board and at subsequent meetings, analytical studies were proposed on agricultural protectionism and non-tariff trade barriers.

Collection and presentation of statistics

Source of data

Foreign trade statistics are compiled by the Australian Bureau of Statistics from documentation submitted by exporters and importers or their agents to the Australian Customs Service as required by the Customs Act.

Scope of the statistics

The statistics presented below are, with one exception, recorded on a *general trade* basis, i.e., total exports include both Australian produce and re-exports, and total imports comprise goods entered directly for home consumption together with goods imported into bonded warehouses. The statistics of import clearances, however, are recorded on a *special trade* basis, i.e., clearances comprise goods entered directly for home consumption together with goods cleared into the home market from bonded warehouses. Exports of Australian produce are goods, materials or articles which have been produced, manufacturered or partly manufactured in Australia, except goods which were originally imported and have undergone only repair or minor operations which leave them essentially unchanged. Re-exports are goods, materials or articles originally imported which are exported either in the same condition in which they were imported or after undergoing repair or minor operations which leave them essentially unchanged. Minor operations include blending, packaging, bottling, cleaning, sorting, husking or shelling. Total exports are the aggregate of exports of Australian produce and re-exports.

The following are excluded from recorded trade statistics:

(a) direct transit trade, i.e., goods being trans-shipped or moved through Australia for purposes of transport only;
(b) migrants' and passengers' effects exported or imported; and parcel post exports and imports of small value, for which Customs entries are not required;
(c) certain materials under inter-governmental agreements for defence and similar projects for which Customs entries are not required;
(d) ships and aircraft engaged in the transport of passengers or goods between Australia and other countries;
(e) the sale or purchase of any ship and/or aircraft intended for use on overseas routes;
(f) fish and other sea products landed in Australia or abroad directly from the high seas by Australian ships;
(g) export consignments where the value of the goods in each transaction is less than $500.
(h) entries lodged on informal clearance documents (ICD) for values not exceeding $500. In addition, from 21 October 1985 onwards, ICD's for postal articles valued between $250 and $1,000 are excluded;

and for imports only;

(i) bunkers and stores supplied to ships and aircraft prior to arrival in Australia.

Statistical period

Exports

Exports are recorded statistically in the month the entries are lodged with the Australian Customs Service. Regular exporters or their agents may provide details of their export shipments on a periodic rather than an individual shipment basis by submitting weekly or monthly returns. These 'periodic returns' must be submitted to the Australian Customs Service within seven days of the end of the period in question covering all shipments during that period. All other exporters are required to report each individual shipment prior to the ship's departure. Approximately 90 per cent of monthly export values are recorded on periodic returns. The statistical month for Customs outports (generally ports other than those at which the main Customs Office in each State is located) closes on the twenty-first of each month, whereas for mainports the statistical month is the calendar month. Because of these factors, export statistics for a particular month do not necessarily represent all of the commodities actually exported during that month. Analysis of past data has shown that in aggregate approximately 40 per cent of export trade by value for a particular month reflects actual shipments during that month, 55 per cent by value was actually exported during the previous month with the remaining 5 per cent by value exported in earlier months. For individual commodities the percentage by value representing actual exports in a month may vary considerably.

Imports

Imports are recorded statistically in the calendar month in which the import entries were both finalised by the Australian Customs Service and passed to the Australian Bureau of Statistics for further processing. Import entries may be lodged early using the check-to-arrive system or the documents may be delayed because of various validation checks carried out by Customs prior to the entries being passed to the Bureau. Import statistics for a particular month do not necessarily represent entries lodged or commodities actually imported during the month in question. Analysis of past data has shown that in aggregate approximately 70 per cent of import trade by value recorded for a particular month was actually imported during that month, 25 per cent was actually imported during the previous month with the remaining 5 per cent being imported in earlier months. For individual commodities the percentage by value representing actual imports in a month may vary considerably.

State

For exports, State statistics comprise the State of origin for Australian produce. State of origin is defined as the State in which the final stage of production or manufacture occurs.

For imports, the State is that in which the import entry was lodged with the Australian Customs Service. The port of lodgement of the import entry is not necessarily the port of discharge of the goods. Goods forwarded interstate after import, whether in containers or not, are recorded as being imported at the port of lodgement of the import entry.

Valuation

Exports

Goods actually sold to overseas buyers prior to shipment are valued at the free-on-board (f.o.b.) Australian port of shipment equivalent of the actual price at which the goods were sold. Goods shipped on consignment are valued at the f.o.b. Australian port of shipment equivalent of the current price offering for similar goods of Australian origin in the principal markets of the country to which the goods are dispatched for sale. The recorded value of exports includes the value of the outside package, other than international containers used for containerised cargo.

Imports

The recorded value of imports is the customs value (formerly referred to as the value for duty). On 30 November 1981, Australia changed its system of valuation from the Brussels Definition of Value (BDV) to the GATT Agreement on Customs Valuation. The Agreement reflects one of a number of trade related codes of conduct established during the round of Multi-lateral Trade Negotiations (MTN) concluded in 1979. The GATT Agreement differs from the Brussels Definition of Value in that it offers a set of practical rules on the valuation of imports rather than a list of conceptual guidelines. Under the Agreement the primary basis for establishing the customs value is the price actually paid or payable, provided a number of conditions are met. The most important condition is that the buyer and seller must be independent of each other. If the conditions are not met, the practical rules are used to determine the customs value. The recording of the value of imports remains on a free-on-board (f.o.b.) basis (i.e. the charges and expenses involved in delivering the goods from the place of exportation to Australia are excluded). The recorded value also continues to include the value of outside packages, other than international containers used for containerised cargo. For details of the method of valuation used prior to 30 November 1981, *see Year Book* No. 66.

Merchandise exports and imports

In accordance with standards recommended by the United Nations:

Merchandise exports are defined as all goods which subtract from the stock of material resources in Australia as a result of their movement out of the country. Merchandise exports, therefore, exclude goods exported with the reasonable expectation of re-import within a limited time. A complete list of commodities not included in merchandise trade is shown under section 9 (b) of the *Australian Export Commodity Classification* (AECC) (1203.0). These include, for example, coin being legal tender and goods for temporary exhibition outside Australia.

Merchandise imports are defined as all goods which add to the stock of material resources in Australia as a result of their movement into the country. Merchandise imports, therefore, exclude goods imported with the reasonable expectation of re-export within a limited time. A complete list of commodities not included in merchandise trade is shown under section 9 (b) of the *Australian Import Commodity Classification* (AICC) (1204.0). These include, for example, coin being legal tender and goods for temporary exhibition in Australia.

From July 1985, non-merchandise trade is excluded from Australia's export and import statistics. This is in accordance with United Nations' recommendations and practices adopted by Australia's major trading partners. Statistics for periods prior to July 1985 included in this publication have been adjusted to be comparable with data from July 1985 onwards and, consequently, will not be directly comparable with previous publications.

Commodity classification

Exports and imports are classified according to the items of AECC and AICC respectively which, from 1 July 1978, have been based on the *Standard International Trade Classification*, Revision 2 (United Nations Statistical Papers, Series M, No. 34, Revision 2, 1975). Copies of, or extracts from these classifications may be obtained from offices of the ABS.

Australian Standard Commodity Classification—ASCC

ASCC has been developed by the ABS to enable users to compare statistics of commodities produced in Australia with statistics of commodities imported and exported.

The ASCC manual (1207.0 and 1208.0) links production, import and export items at their most detailed level of comparability in the form of standard (ASCC) commodity items. In a large number of cases, however, due to the differences between production, import and export items, comparability is only achieved at fairly broad aggregate levels. In ASCC, commodities are grouped under industries (as defined in the *Australian Standard Industrial Classification* ASIC) in which they are typically produced. (*See* Chapter 18, Manufacturing and Internal Trade).

ASIC industry of origin

Export and Import statistics are classified according to subdivisions of ASIC. The statistics are complied by allocating statistical items of AECC and AICC to the ASIC industry of origin with whose main economic activities the commodities are primarily associated. A full description of ASIC classes is contained in the publication *Australian Standard Industrial Classification,* Vol. 1—*The Classification* (1201.0).

Broad economic categories

Exports and Imports of merchandise are classified according to the nineteen categories of the United Nations classification, Broad Economic Categories (BEC). BEC attempts to classify foreign trade statistics for the purposes of general economic analysis according to the main end use of the commodities traded.

Harmonized commodity description and coding system

From 1 January 1988, detailed import and export statistics have been reported solely according to the Harmonized Tariff and the Australian Harmonized Export Commodity Classification respectively. Statistical output is now based on the *Standard International Trade classification* (SITC) *Revision 3,* which is closely aligned with the Harmonized commodity classifications. SITC Rev 3 based import and export data will be shown in the 1989 and ensuing *Year Books.*

Country

For the purposes of foreign trade statistics, a country is defined as a geographical entity which trades, or has the potential to trade, with Australia in accordance with Australian Customs provisions. External territories under Australian administration *are* treated separately while self-governing territories and dependant territories under the administration of other countries *may* be treated as individual countries in Australian foreign trade statistics.

Exports: for exports, *country* refers to the country to which the goods were consigned at the time of export. Where it was found to be impossible to determine the destination, goods are recorded as *Destination unknown.*

Imports: for imports, *country* refers to the country of origin of the goods which is defined as the country of production for customs purposes. Where it is found to be impossible to determine the origin, goods are recorded as *Origin unknown.*

Quantity data

Where quantities are shown they are generally expressed in terms of the normal unit of quantity used in the appropriate industry and as specified in AECC and AICC published by the ABS. Quantities are not tabulated in respect of statistical items for which there is no appropriate unit of quantity (e.g. a statistical item which covers a number of commodities that cannot be recorded under a single unit of quantity).

Excess of exports or imports

The excess of the value of exports or imports does not represent the balance of trade. The balance of trade is the excess of exports or imports on a *balance of payments* basis. Details of the adjustments (relating to coverage, timing and valuation) made to total recorded exports and imports for balance of payments purposes, are set out in the annual publication *Balance of Payments, Australia* (5303.0).

Treatment of confidential data

To ensure that information about the activities of particular businesses is not disclosed, it is necessary to restrict the release of statisitics of certain commodities. These restrictions do not affect total export or import figures but they can affect statistics at all levels of the Australian Export and Import Commodity Classifications.

Foreign trade statistics

Total foreign trade

The following table shows the total Australian trade with foreign countries from 1981–82 to 1986–87.

FOREIGN TRADE

($ million)

Year	*Exports*	*Imports*	*Excess of exports (+) or imports (—)*
1981–82	19,294	22,767	−3,473
1982–83	21,454	21,216	+238
1983–84	24,013	23,540	+473
1984–85	29,708	29,049	+659
1985–86	32,818	34,691	−1,873
1986–87 (*p*)	35,725	37,092	−1,367

The following table shows particulars of non-merchandise trade for recent years.

NON-MERCHANDISE TRADE

($ million)

Year	*Exports*	*Imports*
1981–82	281	238
1982–83	668	590
1983–84	753	521
1984–85	834	971
1985–86	1,418	1,045
1986–87 (*p*)	1,384	1,042

The following diagrams show the foreign trade of Australia, 1976–77 to 1986–87 and the value of exports and imports, proportions by country, 1981–82 to 1986–87.

Classified summary of Australian foreign trade

The following table shows exports and imports according to divisions of the Australian Export and Import Commodity Classifications (based on the *Standard International Trade Classification* Revision 2).

Classified summary of Australian foreign trade

The following table shows exports and imports according to divisions of the Australian Export and Import Commodity Classifications (based on the *Standard International Trade Classification* Revision 2).

EXPORTS AND IMPORTS: DIVISIONS OF THE AUSTRALIAN EXPORT AND IMPORT COMMODITY CLASSIFICATIONS

($'000)

Division No.	*Description*	*Exports*			*Imports*		
		1984-85	*1985-86*	*1986-87(p)*	*1984-85*	*1985-86*	*1986-87(p)*
00	Live animals	247,652	279,546	309,258	39,782	81,892	112,824
01	Meat and meat preparations	1,373,866	1,700,615	2,251,400	20,163	16,674	16,334
02	Dairy products and birds' eggs	420,332	437,031	467,757	68,944	78,344	80,958
03	Fish, crustaceans and molluscs, and preparations thereof	402,872	486,835	598,390	304,109	333,381	422,825
04	Cereals and cereal preparations	4,023,955	(*a*)3,940,231	(*a*)2,775,788	60,395	68,528	72,898
05	Vegetables and fruit	258,623	372,086	551,027	281,424	262,823	(*b*)271,849
06	Sugar, sugar preparations, honey	612,122	649,537	693,956	23,668	22,927	28,342
07	Coffee, tea, cocoa, spices, and manufactures thereof	38,188	57,140	65,256	344,410	418,781	404,752
08	Feeding stuff for animals (not including unmilled cereals)	123,119	150,114	208,992	40,410	37,828	54,391
09	Miscellaneous edible products and preparations	26,385	29,170	48,014	63,326	96,958	147,446
11	Beverages	57,005	69,528	133,006	137,930	199,890	210,857
12	Tobacco and tobacco manufactures	14,515	15,179	18,638	87,481	97,693	116,454
21	Hides, skins and furskins, raw	320,776	395,411	544,587	3,121	3,788	3,841
22	Oil seeds and oleaginous fruit	31,284	51,246	41,638	18,211	7,744	9,677
23	Crude rubber (including synthetic and reclaimed)	1,929	4,245	5,618	72,029	75,845	87,711
24	Cork and wood	223,169	264,454	361,085	325,619	328,438	297,635
25	Pulp and waste paper	10,410	14,673	27,555	100,493	103,739	171,103
26	Textile fibres and their wastes (other than wool tops) (not manufactured into yarn or fabric)	2,622,751	3,207,282	3,870,873	120,913	134,632	150,460
27	Crude fertilisers and crude minerals (excluding coal, petroleum and precious stones)	143,974	152,461	(*c*)103,388	204,557	259,961	224,967
28	Metalliferous ores and metal scrap	(*d*)4,577,988	(*d*)4,854,725	(*d*)4,845,709	23,218	26,148	38,951
29	Crude animal and vegetable materials, n.e.s.	58,497	70,470	97,693	63,955	82,417	99,995
32	Coal, coke and briquettes	4,665,173	5,252,367	5,454,304	7,151	3,041	2,788
33	Petroleum, petroleum products and related materials	2,420,304	2,276,132	1,618,784	2,291,162	1,923,951	1,740,067
34	Gas, natural and manufactured	398,984	460,851	230,988	680	384	4,255
41	Animal oils and fats	105,703	116,419	89,734	1,239	1,026	2,020
42	Fixed vegetable oils and fats	10,113	10,497	22,248	57,112	43,612	64,263
43	Animal and vegetable oils, fats, and waxes of animal or vegetable origin	8,595	15,387	11,370	53,723	48,974	(*e*)25,146
51	Organic chemicals	50,066	(*f*)53,773	(*f*)50,720	(*g*)672,403	(*h*)765,610	(*i*)878,777
52	Inorganic chemicals	(*j*)56,277	(*j*)58,862	65,642	(*k*)189,207	(*k*)248,714	(*l*)321,497
53	Dyeing, tanning and colouring materials	(*m*)25,375	(*m*)29,574	(*m*)37,347	115,473	143,100	189,114
54	Medicinal and pharmaceutical products	122,294	147,500	165,933	293,809	393,036	507,742
55	Essential oils and perfume materials; toilet, polishing and cleansing preparations	40,063	58,672	57,263	170,228	220,834	241,817
56	Fertilisers, manufactured	4,382	2,315	5,321	177,777	146,587	139,771
57	Explosives and pyrotechnic products	7,630	7,748	5,447	25,400	15,988	14,099
58	Artificial resins and plastic materials, and products	138,411	132,195	138,068	(*n*)567,157	(*n*)679,018	(*n*)784,167
59	Chemical materials and products, n.e.s.	98,520	101,649	139,392	337,496	411,511	393,669
61	Leather, leather manufactures, n.e.s. and dressed furskins	68,598	88,463	117,527	110,512	126,074	151,515
62	Rubber manufactures, n.e.s.	14,607	19,095	41,216	385,324	449,521	462,193
63	Cork and wood manufactures (excluding furniture)	6,452	7,810	(*o*)9,157	149,677	167,827	169,112
64	Paper, paperboard and manufactures, and articles of paper pulp, of paper or of paperboard	68,638	74,888	103,691	838,266	842,161	1,013,560
65	Textile yarn, fabrics, made-up articles, n.e.s. and related products	166,087	221,292	246,391	1,443,655	1,678,333	(*q*)1,831,894
66	Non-metallic mineral manufactures, n.e.s.	122,718	(*s*)150,080	(*s*)174,338	539,340	(*t*)653,664	(*t*)712,607
67	Iron and steel	463,898	580,013	590,767	547,177	608,939	634,612
68	Non-ferrous metals	1,869,058	1,946,312	2,310,902	123,377	164,653	203,039
69	Manufactures of metal, n.e.s.	180,383	190,341	243,562	(*u*)781,978	(*u*)928,687	(*u*)1,007,610
71	Power generating machinery and equipment	194,374	229,152	295,999	682,661	991,454	1,214,253
72	Machinery specialised for particular industries	175,394	241,987	305,490	(*v*)1,651,647	(*v*)2,052,115	(*w*)1,737,261
73	Metalworking machinery	28,287	27,353	26,108	222,493	384,961	483,834

EXPORTS AND IMPORTS: DIVISIONS OF THE AUSTRALIAN EXPORT AND IMPORT COMMODITY CLASSIFICATIONS—*continued*

($'000)

Division No.	*Description*	*Exports* 1984-85	1985-86	1986-87(p)	*Imports* 1984-85	1985-86	1986-87(p)
74	General industrial machinery and equipment, n.e.s. and machine parts, n.e.s.	167,145	179,576	235,437	(*x*)1,382,543	(*x*)1,853,658	(*x*)1,980,648
75	Office machines and automatic data processing equipment	158,191	219,546	387,354	1,667,110	2,173,629	2,557,486
76	Telecommunications and sound recording and reproducing apparatus and equipment	58,935	66,435	87,642	1,167,286	1,466,493	1,504,819
77	Electrical machinery, apparatus and appliances, n.e.s. and electrical parts thereof	156,770	181,536	(*y*)256,154	(*z*)1,472,323	(*z*)1,842,672	(*z*)1,886,194
78	Road vehicles (including air cushion vehicles)	299,515	261,671	438,818	3,087,780	3,771,337	2,724,078
79	Other transport equipment	241,274	210,368	578,118	566,533	605,174	1,345,224
81	Sanitary, plumbing, heating and lighting fixtures and fittings, n.e.s.	8,988	10,079	15,560	67,974	80,259	75,372
82	Furniture and parts thereof	16,149	22,379	33,591	193,663	237,702	235,222
83	Travel goods, handbags and similar containers	3,575	2,982	4,117	137,004	146,773	179,763
84	Articles of apparel and clothing accessories	17,702	23,277	39,311	538,998	567,859	656,818
85	Footwear	5,106	6,750	9,416	178,592	207,614	250,679
87	Professional, scientific and controlling instruments and apparatus, n.e.s.	141,070	162,453	176,455	641,543	844,775	906,944
88	Photographic apparatus, equipment and supplies and optical goods, n.e.s.; watches and clocks	177,201	203,108	249,938	(*aa*)511,371	(*aa*)635,477	(*aa*)720,116
89	Miscellaneous manufactured articles, n.e.s.	215,134	229,037	326,255	1,596,563	(*ab*)1,948,610	(*ab*)2,160,292
9A	Commodities and transactions of trade, n.e.s. (*ac*) (*ad*)	941,742	1,335,683	2,309,269	999,877	1,476,959	1,953,010
	Total trade (*ae*)	**29,708,296**	**32,817,583**	**35,724,770**	**29,049,445**	**34,691,197**	**37,091,617**

(*a*) Excludes AECC items 042.12.01, 042.12.03, 042.21.15 and 042.22.00 (*b*) Excludes AICC items 054.20.27 and 054.20.39 (*c*) Excludes AECC item 278.30.05 (*d*) Excludes AECC items 287.31.00, 287.70.00, 287.93.07 and 287.99.19 (*e*) Excludes AICC item 431.10.08 (*f*) Excludes AECC item 511.30.09 (from 1.11.85 to 28.2.87) (*g*) Excludes AICC items 511.13.01, 511.40.01, 513.79.13, 513.90.13, 513.90.15 and 513.90.39 (*h*) Excludes AICC items 511.13.01, 511.39.01 (from 1.6.86), 511.39.07, 511.40.01, 512.17.02, 512.17.15, 513.79.13 (to 31.7.85), 513.90.01, 513.90.13 (to 30.11.85), 513.90.15 and 513.90.39 (*i*) Excludes AICC items 511.13.01, 511.39.01 (to 31.8.86), 511.39.07, 511.40.01, 512.17.02, 512.17.15, 513.90.01, 513.90.15, 513.90.39 and 516.14.00 (*j*) Excludes AECC item 522.49.00 (*k*) Excludes AICC item 522.13.00 (*l*) Excludes AICC items 522.13.00, 522.43.00 and 523.23.00 (*m*) Excludes AECC item 533.10.00 (*n*) Excludes AICC item 582.70.04 (*o*) Excludes AECC item 634.32.00 (*q*) Excludes AICC item 651.43.09 (*s*) Excludes AECC item 667.21.00 (*t*) Excludes AICC item 661.20.01 (*u*) Excludes AICC items 691.10.05, 694.01.02 and 695.39.60 (*v*) Excludes AICC item 723.30.01 (*w*) Excludes AICC items 721.19.07, 721.19.29 and 723.30.01 (*y*) Excludes AECC item 775.77.01 (*x*) Excludes AICC items 749.10.70 and 749.10.76 (*z*) Excludes AICC item 775.86.01 (*aa*) Excludes AICC item 881.11.45 (*ab*) Excludes AICC item 899.31.09 (*ac*) Includes export commodities above subject to a confidentiality restriction and not included in the relevant AECC Division. (*ad*) Includes import commodities above subject to a confidentiality restriction and not included in the relevant AICC Division. (*ae*) Total trade excludes non-merchandise trade.

EXPORTS OF MAJOR COMMODITIES

Description (AECC No.)	*Unit of quantity*	*Quantity* 1984–85	1985–86	1986–87(p)	*Value ($'000)* 1984–85	1985–86	1986–87(p)
Aircraft and associated equipment and parts thereof (792)		..	..	..	166,098	167,688	492,674
Alumina (aluminium oxide) (287.32)	tonnes	7,022,321	7,427,180	8,149,712	1,384,676	1,380,240	1,529,771
Aluminium (684)	tonnes	582,403	652,076	689,320	945,259	1,061,049	1,320,295
Artificial resins and plastics (582) (583)		..	..	..	131,935	120,926	118,817
Barley (043.00)	tonnes	4,062,885	4,168,194	2,191,248	592,275	536,674	253,976
Cars, other road vehicles and parts thereof (78)		..	..	..	299,515	261,671	438,818
Cheese (024.00)	tonnes	67,610	66,140	62,147	163,691	165,514	164,328
Coal (anthracite, bituminous) (except briquettes) (325.10.01,03, 05,11,13)	tonnes	86,034,511	90,458,999	97,646,283	4,653,902	5,211,676	5,426,036

EXPORTS OF MAJOR COMMODITIES—*continued*

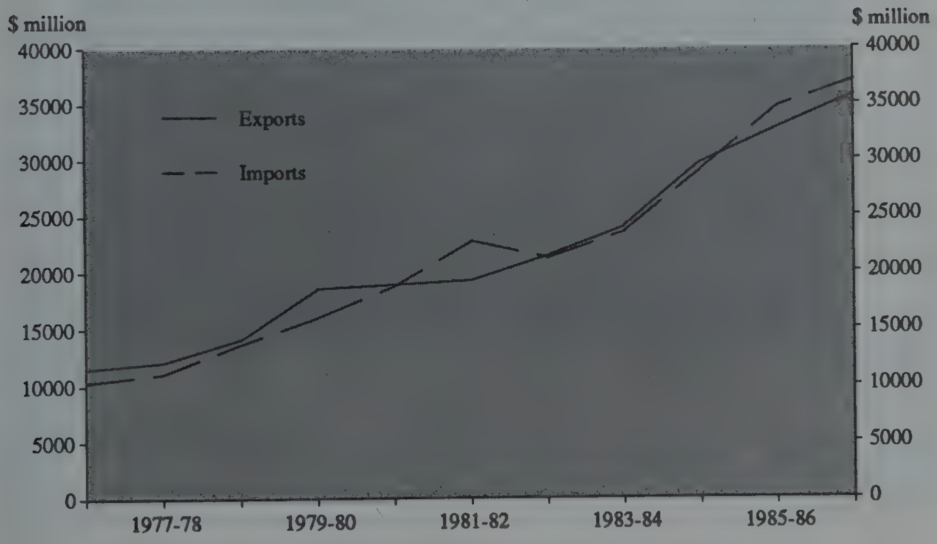
Description (AECC No.)	*Unit of quantity*	*Quantity*			*Value ($'000)*		
		1984–85	*1985–86*	*1986–87(p)*	*1984–85*	*1985–86*	*1986–87(p)*
Copper ores and concentrates (287.11)	tonnes	216,431	266,071	166,954	100,307	121,398	69,816
Copper, refined, unwrought (682.12)	tonnes	63,375	76,798	76,685	110,229	149,461	163,191
Cotton, not carded or combed (263.10)	tonnes	139,667	241,240	251,003	259,633	378,369	344,904
Crustaceans and molluscs (except canned or bottled) (036.00)	tonnes	22,706	22,645	23,484	357,201	414,474	487,590
Fruit and nuts, including fruit preserves and preparations (057,058)		..	..	..	201,196	265,064	373,376
Gas, natural and manufactured (341)		..	..	..	398,984	460,851	230,988
Gold, silver and platinum (including ores and concentrates) (289,681,971)		..	..	..	631,516	842,782	1,449,742
Hides and skins, bovine and equine (211.10, 20)	tonnes	97,091	104,716	..	180,606	199,284	258,568
Iron and steel (67)	tonnes	1,359,351	1,450,664	1,371,361	470,874	580,013	590,767
Iron ore and concentrates (except roasted iron pyrites) (281.50, 60)	tonnes	87,589,170	82,529,784	73,155,547	1,835,233	1,936,248	1,752,711
Lead and lead alloys (including silver-lead) unwrought (685.11, 12,13)	tonnes	299,432	332,546	287,041	250,666	281,126	290,653
Machinery and equipment, power generating (71)		..	..	..	194,374	229,152	295,999
Machinery specialised for particular industries (72)		..	..	..	175,394	241,987	305,490
Meat of bovine animals (011.11,12)	tonnes	411,545	477,042	570,147	1,078,334	1,317,274	1,754,580
Meat, fresh, chilled or frozen—sheep, lambs and goats (011.20)	tonnes	91,953	144,003	167,386	149,911	218,528	295,432
Milk and cream (except fresh) (022.41,42,43,49)	tonnes	149,671	141,763	154,928	167,856	181,843	230,428
Nickel and nickel alloys, unwrought (683.10)		..	..	..	146,804	123,220	129,016
Nickel mattes, sinters, etc (287.22)		..	..	..	260,027	364,313	253,726
Office machines and automatic data processing equipment (75)		..	..	..	158,191	219,546	387,354
Petroleum oils, crude (333)		..	..	..	1,265,543	1,152,522	782,346
Petroleum products (334, 335)		..	..	..	1,154,762	1,123,610	836,438
Photographic and cinematographic supplies (882)		..	..	..	138,151	158,903	183,652
Sheep and lambs, live (001.21)		..	..	..	190,920	170,744	206,077
Skins, sheep and lamb, with wool on (211.60.01,05,09,13, 19,21,25)	tonnes	69,721	91,189	..	117,344	177,698	263,102

EXPORTS OF MAJOR COMMODITIES—*continued*

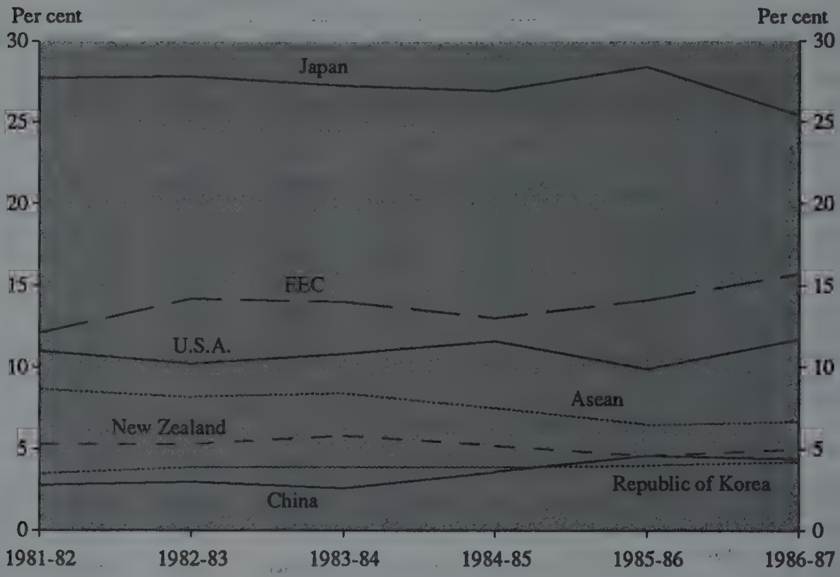
Description (AECC No.)	*Unit of quantity*	*Quantity*			*Value ($'000)*		
		1984–85	*1985–86*	*1986–87(p)*	*1984–85*	*1985–86*	*1986–87(p)*
Sorghum, unmilled (045.92)	tonnes	1,593,535	1,234,193	817,853	242,011	177,560	90,624
Sugar—from cane (except icing sugar) (061.10.01) (061.10.03; 061.20.01)	tonnes	2,524,472	2,748,275	2,470,354	575,427	616,000	634,450
Titanium and zirconium ores and concentrates (except beneficiated ilmenite) (287.93.03, 05,11,13,15, 17,21,23,25,27)	tonnes	1,780,983	1,876,242	1,714,866	169,198	213,583	266,553
Uranium, thorium ores and concentrates (286)	tonnes	20,269	21,820	16,445	324,981	306,555	397,428
Wheat (including spelt) and meslin, unmilled (041)	tonnes	15,648,818	16,108,761	14,502,303	2,856,540	2,968,814	2,141,005
Wood chips (246.02.03, 04)	tonnes	2,371,431	2,421,610	3,117,319	208,695	248,531	345,786
Wool, greasy or fleece-washed (268.10)	tonnes	555,322	607,900	677,309	1,960,523	2,285,529	2,838,775
Wool, degreased (268.20)	tonnes	74,621	90,870	105,348	376,494	514,572	657,723
Zinc and zinc alloys, unwrought (686.10)	tonnes	213,020	212,412	233,590	255,156	213,302	289,745
Zinc ores and concentrates (287.50)	tonnes	749,754	975,919	798,175	205,699	240,829	209,606
Total major commodities		..	..	..	*25,506,131*	*27,999,123*	*29,552,356*
Total (*a*)		..	..	..	**29,708,296**	**32,817,583**	**35,724,770**

(*a*) Total exports excludes non-merchandise trade.

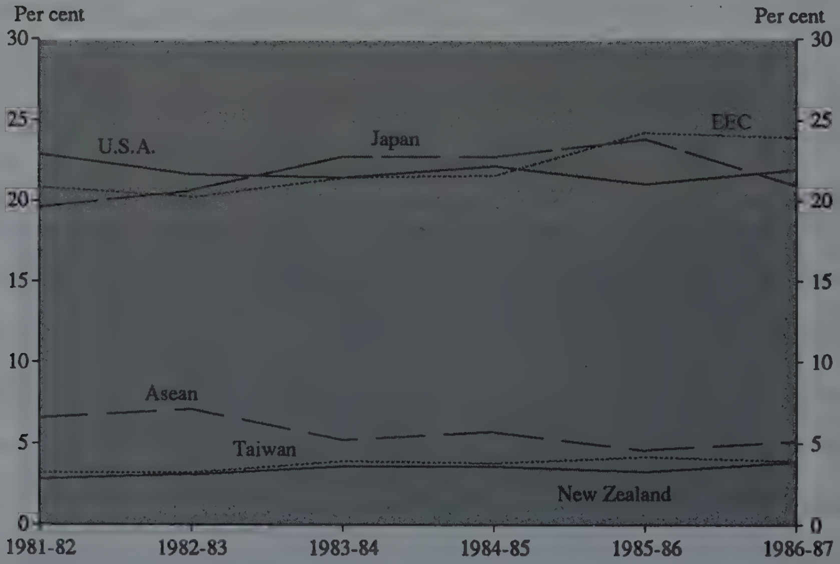
EXPORTS AND IMPORTS, AUSTRALIA



EXPORTS TO MAJOR COUNTRIES AND COUNTRY GROUPS AUSTRALIA



IMPORTS FROM MAJOR COUNTRIES AND COUNTRY GROUPS AUSTRALIA



EXPORTS BY AUSTRALIAN STANDARD INDUSTRIAL CLASSIFICATION

($ million)

ASIC Division/Subdivision	*1984–85*	*1985–86*	*1986–87(p)*
Agriculture, forestry, fishing and hunting			
Agriculture	6,229.5	6,630.2	6,097.7
Forestry and logging	3.1	3.0	3.8
Fishing and hunting	12.8	11.5	21.4
Total	*6,245.4*	*6,644.8*	*6,122.9*
Mining			
Metallic minerals	2,833.6	2,987.9	2,899.3
Coal	4,656.7	5,215.3	5,429.3
Oil and gas	1,664.5	1,613.4	1,013.3
Construction materials	1.2	1.2	2.0
Other non-metallic minerals	169.8	176.6	120.2
Total	*9,325.9*	*9,994.4*	*9,464.1*
Manufacturing			
Confidential items falling within ASIC classes 0124 to 2963 incl.	—	—	—
Food, beverages and tobacco	3,853.7	4,497.4	5,668.0
Textiles	824.4	1,158.5	1,304.4
Clothing and footwear	25.6	33.2	52.6
Wood, wood products and furniture (including sheet metal furniture (3152))	246.3	296.5	407.1
Paper, paper products, printing and publishing	141.2	153.3	200.1
Chemical, petroleum and coal products	1,657.8	1,675.6	1,423.9
Non-metallic mineral products	45.5	56.8	76.9
Basic metal products	4,510.3	5,075.4	6,052.4
Fabricated metal products (excluding sheet metal furniture (3152))	159.2	168.6	234.8
Transport equipment	679.2	627.5	1,241.4
Other machinery and equipment	1,188.9	1,425.6	1,899.7
Miscellaneous manufacturing	245.4	283.4	400.2
Total	*13,577.5*	*15,451.9*	*18,961.4*
Other industries			
Wholesale and retail trade, business services	39.5	29.4	36.3
Confidential items; waste scrap n.e.c.; Second hand goods n.e.c.; Special goods	520.0	697.2	1,140.1
Total	*559.5*	*726.5*	*1,176.4*
Total (*a*)	**29,708.3**	**32,817.6**	**35,724.8**

IMPORTS BY AUSTRALIAN STANDARD INDUSTRIAL CLASSIFICATION

($ million)

ASIC Division/Subdivision	*1984–85*	*1985–86*	*1986–87(p)*
Agriculture, forestry, fishing and hunting			
Agriculture	418.9	518.0	572.0
Forestry and logging	2.5	4.0	3.5
Fishing and hunting	5.4	6.0	5.6
Total	*426.8*	*528.0*	*581.2*
Mining			
Metallic minerals	11.4	11.6	24.2
Coal	4.5	1.1	0.3
Oil and gas	910.6	587.9	569.8
Construction materials	16.1	16.9	15.9
Other non-metallic minerals	184.8	238.1	205.7
Total	*1,127.3*	*855.6*	*815.9*
Manufacturing			
Confidential items falling within ASIC classes 0124 to 2963 incl.	3.8	4.9	—
Food, beverages and tobacco	1,280.6	1,412.1	1,607.8
Textiles	1,464.8	1,701.9	1,878.4
Clothing and footwear	758.0	824.6	954.9
Wood, wood products and furniture (including sheet metal furniture (3152))	672.0	735.0	706.9
Paper, paper products, printing and publishing	1,402.7	1,487.9	1,747.7
Chemical, petroleum and coal products	3,663.1	4,042.2	4,270.7
Non-metallic mineral products	492.8	583.1	641.0
Basic metal products	772.7	940.0	1,046.1
Fabricated metal products (excluding sheet metal furniture (3152))	747.8	896.4	960.5
Transport equipment	3,956.2	4,771.4	4,727.5
Other machinery and equipment	9,379.1	12,206.5	12,749.8
Miscellaneous manufacturing	1,854.4	2,199.4	2,408.4
Total	*26,447.9*	*31,805.5*	*33,699.7*
Other industries			
Wholesale and retail trade, business services	108.9	140.3	169.1
Confidential items; waste scrap n.e.c.; Second hand goods n.e.c.; Special goods	938.5	1,361.7	1,825.7
Total	*1,047.4*	*1,502.0*	*1,994.8*
Total (*a*)	**29,049.4**	**34,691.2**	**37,091.6**

(*a*) Total trade excludes non-merchandise trade.

Direction of foreign trade

Exports and imports, by country of consignment or of origin

The following table shows the value and percentage of Australian exports and imports according to principal country of consignment or origin. The proportions of Australian exports and imports by country of origin or consignment are shown graphically on page 900.

AUSTRALIAN EXPORTS AND IMPORTS, VALUE BY COUNTRY OR COUNTRY GROUP OF CONSIGNMENT OR ORIGIN

($'000)

	Exports			*Imports*		
Country	*1984–85*	*1985–86*	*1986–87(p)*	*1984–85*	*1985–86*	*1986–87(p)*
Argentina (Argentine Republic)	58,603	47,398	77,143	15,289	33,707	48,669
Association of South-East Asian Nations—						
Brunei Darussalam	10,827	10,263	13,023	—	1	32,421
Indonesia, Republic of	431,051	522,211	510,889	363,083	209,310	310,465
Malaysia	603,822	515,995	574,393	318,401	325,432	409,770
Philippines, Republic of	191,176	205,240	256,090	110,593	122,519	113,383
Singapore, Republic of	782,002	725,823	790,473	711,842	745,209	754,696
Thailand, Kingdom of	200,000	163,774	224,022	155,441	200,874	284,338
Total ASEAN	*2,218,878*	*2,143,304*	*2,368,890*	*1,659,361*	*1,603,345*	*1,905,071*
Austria, Republic of	12,805	20,690	12,132	83,312	128,017	141,523
Bahrain, State of	113,119	127,553	78,717	79,994	28,336	19,479
Bangladesh, People's Republic of	73,769	27,997	33,196	22,267	18,589	17,738
Brazil, Federal Republic of	83,531	98,085	139,004	257,189	245,972	219,497
Canada	298,438	460,187	637,597	606,395	691,157	750,754
China, People's Republic of	1,061,759	1,497,376	1,586,344	375,326	435,032	588,931
Czechoslovakia (Czechoslovak Socialist Republic)	40,996	47,292	34,353	29,733	32,444	28,883
Egypt, Arab Republic of (*a*)	448,844	508,129	344,679	385	281	241
European Economic Community—						
Belgium-Luxembourg	216,721	266,901	289,336	216,186	287,112	311,439
Denmark, Kingdom of	65,424	127,849	161,866	131,739	172,886	176,683
France (French Republic)	669,787	708,094	909,294	558,912	776,124	824,971
Germany, Federal Republic of	722,099	881,419	1,099,957	1,811,637	2,743,163	2,784,889
Greece (Hellenic Republic)	50,444	68,089	34,748	51,723	47,189	45,294
Ireland (Irish Republic)	2,920	7,862	5,972	124,878	150,248	184,319
Italy (Italian Republic)	581,325	686,586	823,700	882,096	1,094,688	1,110,591
Netherlands, Kingdom of the	457,277	426,868	596,890	350,730	430,680	486,731
Portugal (Portuguese Republic) (*b*)	26,139	72,018	35,276	25,439	35,253	32,447
Spain (Spanish State) (*b*)	143,493	231,928	293,103	137,123	155,547	140,956
United Kingdom of Great Britain and Northern Ireland	923,012	1,150,845	1,373,540	1,961,638	2,515,632	2,766,512
Total EEC	*3,858,641*	*4,628,458*	*5,623,682*	*6,252,101*	*8,408,521*	*8,864,833*
Fiji	157,904	205,107	174,316	40,007	50,185	27,731
Finland, Republic of	21,867	58,645	49,675	193,487	208,463	263,079
Hong Kong	839,362	721,827	1,086,974	656,809	676,476	799,953
India, Republic of	238,175	428,290	419,009	169,133	170,527	203,440
Iran, Islamic Republic of	453,231	305,249	361,634	2,656	18,659	4,390
Iraq, Republic of	287,409	206,497	194,714	2,106	125	606
Israel, State of	42,618	64,831	71,042	76,784	95,831	86,492
Japan	7,986,702	9,325,730	9,115,557	6,608,577	8,248,305	7,744,933
Jordan, Hashemite Kingdom of	22,666	31,804	7,826	1,070	9,331	90
Korea, Republic of	1,157,900	1,318,946	1,492,149	474,047	556,666	898,265
Kuwait, State of	118,260	132,177	86,602	339,316	297,025	162,629
Libyan Arab Jamahiriya, Socialist People's	29,557	1,373	26,538	1	2	4
Mauritius	20,828	20,487	26,531	2,389	3,264	3,359
Mexico (United Mexican States)	90,889	48,029	41,742	45,357	66,151	55,364
New Caledonia	33,832	40,825	55,096	1,520	2,941	1,895
New Zealand	1,541,562	1,505,157	1,777,333	1,104,204	1,454,427	1,431,241
Norway, Kingdom of (*a*)	11,246	20,936	24,283	58,011	76,211	96,504
Oman, Sultanate of	38,347	53,652	46,306	9,501	35,464	17,617
Pakistan, Islamic Republic of	160,524	181,529	100,555	28,496	40,017	61,045
Papua New Guinea	516,195	563,452	652,806	114,138	170,946	189,747

AUSTRALIAN EXPORTS AND IMPORTS, VALUE BY COUNTRY OR COUNTRY GROUP OF CONSIGNMENT OR ORIGIN—*continued*

($'000)

Country	*Exports*			*Imports*		
	1984–85	*1985–86*	*1986–87(p)*	*1984–85*	*1985–86*	*1986–87(p)*
Poland (Polish People's Republic)	118,464	137,593	107,416	15,818	18,507	21,228
Romania, Socialist Republic of	60,937	86,378	114,667	20,009	8,665	12,997
Saudi Arabia, Kingdom of	468,926	486,550	306,794	638,092	470,822	437,266
South Africa, Republic of	206,401	137,658	156,639	136,854	157,831	154,718
Sri Lanka, Democratic Socialist Republic of	51,094	56,397	36,250	21,422	21,709	21,220
Sweden, Kingdom of	48,814	90,714	118,093	483,526	657,791	655,307
Switzerland (Swiss Confederation)	51,478	56,642	338,364	276,376	428,478	490,170
Taiwan	846,417	1,063,092	1,227,732	1,052,260	1,161,078	1,518,028
Turkey, Republic of	58,622	80,630	116,763	9,233	13,170	19,925
Uganda, Republic of	4,715	389	657	14,963	9,033	4,997
United Arab Emirates	189,715	178,791	216,206	170,639	134,806	175,845
United States of America	3,457,753	3,249,347	4,195,132	6,425,897	7,283,677	8,118,673
U.S.S.R.	834,443	969,719	687,725	28,224	10,251	15,136
Venezuela, Republic of	5,609	7,087	10,471	826	770	1,167
Yemen, Arab Republic	67,323	100,472	64,318	2	—	—
Yemen, People's Democratic Republic of	47,595	50,198	29,178	—	54	—
Yugoslavia, Socialist Federal Republic of	128,898	54,801	110,390	28,790	33,047	38,011
Zimbabwe	4,326	6,170	4,832	4,778	6,152	294,100
Other countries	1,018,092	1,163,726	1,136,086	406,525	460,744	467,395
Country of origin or destination unknown	217	217	632	6,250	8,195	11,431
Total	**29,708,296**	**32,817,583**	**35,724,770**	**29,049,445**	**34,691,197**	**37,091,617**

(*a*) Excludes exports of alumina. Alumina exports for Egypt, Iceland and Norway are included in 'Other countries'.
(*b*) Portugal and Spain became members of the EEC on 1 January 1986.

Foreign trade by State

The following table shows the value of exports and imports for each State and Territory.

EXPORTS AND IMPORTS BY STATE

($'000)

State(a)	*1985–86*		*1986–87(p)*	
	Exports	*Imports*	*Exports*	*Imports*
New South Wales	7,373,750	15,129,910	8,355,713	16,195,265
Victoria	6,806,068	12,408,781	7,372,846	13,751,452
Queensland	7,606,400	2,649,953	7,727,354	2,501,990
South Australia	1,988,233	1,736,757	2,058,525	1,503,755
Western Australia	6,516,203	2,063,074	6,626,143	2,542,248
Tasmania	900,011	299,398	1,099,808	289,525
Northern Territory	603,747	354,509	750,475	265,705
Australian Capital Territory	3,834	48,814	917	41,677
State not available	121,212	—	121,009	—
Re-exports	898,125	—	1,611,980	—
Total (*b*)	**32,817,583**	**34,691,197**	**35,724,770**	**37,091,617**

(*a*) For imports: State in which entry was lodged. The State of lodgement is not necessarily the State in which the goods were discharged or consumed. For exports: State is State of origin of Australian produce and State of final shipment of re-exported goods. State of origin is defined as the State in which the final stage of production or manufacture occurs. Because of this change in the basis on which statistics by State are derived, figures from 1 July 1978 are not directly comparable with those for previous periods. (*b*) Total excludes non-merchandise trade.

Import clearances, dutiable clearances, and customs duties collected

The following table shows the value of total import clearances, total dutiable clearances, and the customs duties collected, together with the ratio of total dutiable clearances to total clearances.

TOTAL IMPORT CLEARANCES, DUTIABLE CLEARANCES, AND DUTIES

		1984–85	1985–86	1986–87(p)
Total import clearances	$'000	29,907,018	35,376,584	38,021,386
Total dutiable clearances	”	18,551,873	21,901,431	23,573,259
Total customs duties collected	”	2,979,888	3,388,711	3,289,505
Ratio of dutiable clearances to total clearance	per cent	62.0	61.9	62.0
Ratio of duties collected to dutiable clearances	”	16.1	15.5	14.0

Excise

Although excise goods have no immediate bearing on foreign trade, the rate of excise duty is in some cases related to the import duty on similar goods. Moreover, as the Excise Acts are administered by the Australian Customs Service, it is convenient to publish here the quantities of Australian produce on which excise duty has been paid. Particulars of customs and excise revenue are shown in Chapter 24, Public Finance. The following table shows the quantities of goods on which excise duty was paid in Australia.

QUANTITIES OF PRINCIPAL EXCISABLE GOODS ON WHICH EXCISE DUTY WAS PAID: AUSTRALIA

Article	*1984–85*	*1985–86*	*1986–87 (p)*
	'000 litre	'000 litre	'000 litre
Beer	1,789,158	1,827,325	1,784,477
	'000 l.al	'000 l.al	'000 l.al
Spirits—			
Brandy	2,044	1,997	1,781
Gin	410	366	232
Whisky	214	228	129
Rum	2,284	2,515	2,303
Liqueurs	163	150	133
Vodka	759	650	478
Flavoured spirituous liqueurs	373	489	414
Other	386	16	306
Total spirits (potable)	*6,633*	*6,411*	*5,776*
	'000kg	'000kg	'000kg
Tobacco	1,236	1,110	969
Cigars	42	32	1
Cigarettes—machine-made	26,485	26,725	25,801
	'000 litre	'000 litre	'000 litre
Petrol—			
Aviation gasoline—for use in aircraft*(a)*	114,755	113,943	114,741
Aviation gasoline—other*(a)*	—	—	—
Gasoline—commercial motor spirit/ethanol blends	—	—	—
Gasoline*(a)*	15,361,473	15,864,207	16,100,824
Aviation turbine kerosene*(a)*	1,149,809	1,304,041	1,373,287
Other kerosene	1,839,954	1,356,502	1,123,207
Diesel fuel	*(b)*8,166,804	*(b)*8,481,365	*(b)*8,850,924
	'000 litre	'000 litre	'000 litre
Crude petroleum oil, liquid petroleum and liquefied petroleum gas	29,812,058	30,584,410	34,822,622
	'000 tonnes	'000 tonnes	'000 tonnes
Coal	112,882	130,928	140,866

(a) Includes supplies to Commonwealth Government on which excise was paid. *(b)* Includes automotive, industrial and marine diesel fuel.

FOREIGN INVESTMENT

Foreign investment statistics provide information on the *level* (stock) of Australia's foreign financial assets and liabilities at a given point in time, *capital transactions* (investment flows) which increase and decrease these assets and liabilities, *other changes* in the value of these assets and liabilities; and *income* receivable and payable on these assets and liabilities.

These statistics form an integral part of Australia's balance of payments as well as being useful in their own right in determining, for example, the impact of foreign investment policies and the level of Australia's foreign assets and liabilities, including foreign debt. The statistics are collected from surveys of foreign investment which have been conducted since 1947–48.

Classification

The primary classification used in foreign investment statistics is the direction of investment. This classification refers to the basic distinction between inward and outward investment; that is, foreign investment in Australia or Australian investment abroad. Broadly, *foreign investment in Australia* refers to the stock of financial assets in Australia owned by foreign residents and capital transactions which increase or decrease this stock. Conversely, *Australian investment abroad* refers to the stock of financial assets abroad owned by Australian residents and capital transactions which increase or decrease this stock.

Foreign investment is undertaken by means of *instruments of investment*. Many types of instrument of investment can be identified, but for analytical reasons and ease of reporting similar instruments are combined.

- *Corporate equities* includes ordinary and preference shares and units in trusts.
- *Borrowing* (foreign investment in Australia) or *lending* (Australian investment abroad) comprises deposits, loans, finance leases, bonds, bills, IMF credit and Bank of International Settlements placements.
- *Reserve Assets* includes monetary gold, Special Drawing Rights and reserve position in the IMF and foreign exchange held by the Reserve Bank of Australia.
- *Other investments* consists of net equity in branches and amounts outstanding in respect of goods, services, interest, dividends etc.
- Finally, *reinvestment of earnings* of direct investors refers to income retained from after tax profits attributable to direct investors.

Statistics are provided in respect of both Australia's *gross foreign debt* (borrowing) and Australia's *net foreign debt*, the latter being derived by deducting reserve assets and lending abroad from gross foreign debt.

The *country* dissection of statistics on foreign investment shows the countries investing in Australia or receiving investment from Australia. The classification is based upon the country of residence of the foreign creditor or debtor holding Australia's financial liabilities or financial assets. It does not necessarily reflect either the country of ultimate beneficial ownership of the investment, the country of immediate source of funds or the country to which amounts borrowed will in fact be repaid.

The *industry* classification used in foreign investment statistics is based upon the *Australian Standard Industry Classification* (ASIC), 1983 edition. For both foreign investment in Australia and Australian investment abroad, investment is classified by the industry of the enterprise group receiving that investment. Industry statistics should be treated with some caution as they do not necessarily reflect the industry in which the funds are ultimately employed.

Coverage

As there is no comprehensive source for identifying enterprises engaged in foreign investment activity, lists of enterprises included in foreign investment surveys are compiled from a variety of sources. These sources include stock exchange reports, company reports, newspapers and the financial press, business directories, tax declaration forms submitted under the Banking (Foreign Exchange) Regulations, information provided on a confidential basis of proposals approved by Foreign Investment Review Board and records of the Commissioner of Corporate Affairs in some States.

Valuation and timing

Market price is the principle method of valuation in foreign investment statistics. Capital transactions are recorded on a change of ownership basis, that is, at the time when the foreign financial assets or liability is acquired, sold, repaid or otherwise disposed of. By convention, this is taken to be the time at which the event is recorded in the books of the transactors. Investment income is generally recorded at the time it becomes due for payment.

Foreign investment statistics

The table below shows a reconciliation between opening and closing levels of foreign investment in Australia, Australian investment abroad and Australia's net international investment position. The table also shows income payable on foreign investment in Australia, income receivable on Australian investment abroad and net income payable.

FOREIGN INVESTMENT SUMMARY TABLE

($A million)

		Changes in levels of investment during the year						
Year	*Levels of investment at beginning of year*	*Reinvestment of earnings of direct investors*	*Other transactions*	*Exchange rate variations*	*Other changes*	*Total*	*Levels of investment at end of year*	*Investment income (a)*
FOREIGN INVESTMENT IN AUSTRALIA								
Corporate Equities—								
1983–84	27,090	742	1,185	..	–326	1,601	28,691	1,645
1984–85	28,691	775	803	..	3,208	4,786	33,477	1,952
1985–86	33,477	505	2,225	..	241	2,971	36,449	1,797
Borrowing—								
1983–84	35,518	..	8,072	–6	74	8,140	43,658	3,705
1984–85	43,658	..	12,696	10,212	360	23,268	66,926	5,297
1985–86	66,926	..	15,866	6,017	2,113	23,996	90,922	6,908
Other Investment (*b*)—								
1983–84	8,424	–189	297	–20	1,037	1,125	9,548	483
1984–85	9,548	–182	718	263	484	1,283	10,832	314
1985–86	10,832	383	–11	124	–100	396	11,228	738
Total (*b*)—								
1983–84	71,034	553	9,553	–26	783	10,863	81,897	5,833
1984–85	81,897	594	14,217	10,475	4,051	29,337	111,234	7,563
1985–86	**111,234**	**888**	**18,080**	**6,141**	**2,254**	**27,363**	**138,599**	**9,442**
AUSTRALIAN INVESTMENT ABROAD								
Corporate Equities(*b*)—								
1983–84	5,863	339	1,174	n.a.	4	1,517	7,380	517
1984–85	7,380	281	2,538	n.a.	659	3,478	10,858	446
1985–86	10,858	599	4,728	792	1,978	8,097	18,955	993
Reserve Assets—								
1983–84	10,748	..	1,855	80	–266	1,669	12,417	744
1984–85 (*c*)	12,417	..	–1,520	2,326	294	1,100	13,517	831
1985–86	13,517	..	–2,140	1,405	242	–493	13,024	598
Lending (*b*)—								
1983–84	1,760	..	169	35	–173	31	1,791	77
1984–85	1,791	..	592	1	691	1,284	3,075	83
1985–86	3,075	..	1,023	421	–500	944	4,019	115
Other Investment (*b*)—								
1983–84	4,147	–31	939	n.a.	64	972	5,119	128
1984–85	5,119	34	1,466	n.a.	18	1,518	6,637	164
1985–86	6,637	39	535	112	–447	239	6,876	219
Total (*b*)—								
1983–84	22,518	309	4,137	115	–373	4,188	26,706	1,468
1984–85	26,706	315	3,075	2,327	1,662	7,379	34,087	1,525
1985–86	**34,087**	**638**	**4,147**	**2,730**	**1,273**	**8,787**	**42,874**	**1,922**

FOREIGN INVESTMENT SUMMARY TABLE—*continued*

($A million)

Year	*Levels of investment at beginning of year*	*Changes in levels of investment during the year* *Reinvestment of earnings of direct investors*	*Other transactions*	*Exchange rate variations*	*Other changes*	*Total*	*Levels of investment at end of year*	*Investment income (a)*
NET INTERNATIONAL INVESTMENT POSITION AND INCOME (*d*)								
Net Corporate Equities—								
1983–84	21,227	403	11	n.a.	–330	84	21,311	1,128
1984–85	21,311	495	–1,735	n.a.	2,549	1,308	22,619	1,506
1985–86	22,619	–94	–2,502	–792	–1,737	–5,126	17,494	804
Net Foreign Debt (*e*)—								
1983–84	23,010	..	6,048	–121	513	6,440	29,450	2,882
1984–85	29,450	..	13,624	7,885	–625	20,884	50,334	4,383
1985–86	50,334	..	16,983	4,191	2,371	23,545	73,879	6,195
Net Other Investment—								
1983–84	4,276	–158	–642	–20	973	153	4,429	355
1984–85	4,429	–216	–748	263	466	–235	4,194	151
1985–86	4,194	344	–546	12	347	157	4,351	519
Total—								
1983–84	48,513	245	5,416	–141	1,156	6,676	55,190	4,365
1984–85	55,190	279	11,142	8,148	2,389	21,958	77,147	6,038
1985–86	**77,147**	**250**	**13,933**	**3,411**	**981**	**18,576**	**95,725**	**7,520**

(*a*) For foreign investment in Australia, income payable is calculated before the deduction of withholding tax. For Australian investment abroad, up to and including 1984–85, income receivable is calculated after deducting withholding tax; from 1985–86 withholding tax is not deducted. (*b*) Details of exchange rate variations are not separately available for a number of items and have consequently been included in 'other changes'. For foreign investment in Australia these items include accounts payable to unrelated foreign enterprises abroad (a component of 'other investment'). For Australian investment abroad, before 1985–86, exchange rate details are only available for bank lending and reserve assets. From 1985–86 exchange rate details are available for all items except accounts receivable from unrelated foreign enterprises abroad (a component of 'other investment'). (*c*) From 1984–85, figures for official reserve assets are not fully comparable with earlier data due to changes in the Reserve Bank's accounting procedures. (*d*) Net international investment position equals foreign investment in Australia less Australian investment abroad. (*e*) Foreign borrowing by Australian residents less the sum of reserve assets and Australian lending abroad.

The following table provides details on Australia's foreign debt, including foreign borrowing, reserve assets and lending abroad and net foreign debt.

LEVELS OF FOREIGN DEBT

($A million)

	At 30 June *1981*	*1982*	*1983*	*1984*	*1985*	*1986*
FOREIGN BORROWING (GROSS DEBT)						
Official—						
Commonwealth Government and Reserve Bank	4,816	5,692	7,682	8,534	12,982	19,553
State government	—	—	—	339	1,901	3,855
Total official	4,816	5,692	7,682	8,874	14,883	23,409
Non-official—						
Financial enterprises—						
Public sector	289	515	648	1,143	2,416	5,086
Private sector	1,565	2,752	3,448	5,127	9,148	15,365
Total	1,854	3,266	4,097	6,270	11,564	20,451
Trading enterprises—						
Public sector	1,707	3,037	5,829	7,711	12,452	13,530
Private sector	6,787	12,183	17,910	20,804	28,027	33,533
Total	8,494	15,220	23,739	28,514	40,479	47,063
Total non-official	10,348	18,487	27,836	34,784	52,043	67,513
Total	*15,164*	*24,178*	*35,518*	*43,658*	*66,926*	*90,922*

LEVELS OF FOREIGN DEBT—*continued*

($A million)

	At 30 June					
	1981	*1982*	*1983*	*1984*	*1985*	*1986*
AUSTRALIAN LENDING ABROAD AND RESERVE ASSETS						
Official—						
Reserve assets (a)	5,709	6,517	10,748	12,417	13,517	13,024
Lending	18	10	7	3	106	137
Total official	5,727	6,527	10,755	12,420	13,623	13,161
Non-official—						
Financial enterprises	504	584	684	576	1,190	2,838
Trading enterprises	434	692	1,068	1,212	1,779	1,044
Total non-official	939	1,276	1,752	1,788	2,969	3,882
Total	*6,666*	*7,803*	*12,507*	*14,208*	*16,592*	*17,043*
NET FOREIGN DEBT (*b*)						
Official—	−911	−835	−3,073	−3,546	1,260	10,248
Non-official—						
Financial enterprises	1,350	2,682	3,412	5,694	10,374	17,613
Trading enterprises	8,059	14,528	22,671	27,303	38,700	46,019
Total non-official	9,409	17,210	26,083	32,997	49,074	63,631
Total	**8,499**	**16,375**	**23,010**	**29,450**	**50,334**	**73,879**

(*a*) From 30 June 1985, figures for official reserve assets are not fully comparable with earlier data due to changes in the Reserve Bank's accounting procedures. (*b*) Foreign borrowing by Australian residents less the sum of Australian lending abroad and reserve assets.

The following tables provide details of foreign investment in Australia and Australian investment abroad classified by country and foreign investment in Australia classified by industry of investment. This information is provided in respect of capital transactions, investment income and levels.

FOREIGN INVESTMENT IN AUSTRALIA, BY COUNTRY

($A million)

	Year					
Country of investor	*1980–81*	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*
CAPITAL TRANSACTIONS						
OECD—						
U.S.A.	1,249	1,482	337	1,351	3,586	4,131
Japan	928	1,501	3,217	1,500	3,454	2,673
Switzerland	369	787	208	134	399	544
EEC—						
U.K.	1,902	2,633	2,419	2,529	2,287	2,164
Other (*a*)	458	679	1,004	656	1,290	3,024
Total	*2,360*	*3,312*	*3,423*	*3,185*	*3,577*	*5,187*
Other OECD (*a*)	179	84	147	242	402	871
Total OECD	*5,085*	*7,166*	*7,332*	*6,412*	*11,418*	*13,407*
ASEAN (*b*)	381	1,854	1,619	2,148	592	−837
Other countries (*b*)	269	934	1,230	586	71	−760
International capital markets	—	101	161	953	2,321	6,598
International institutions	−54	97	86	−137	−55	14
Unallocated	328	343	−140	145	462	548
Total	**6,009**	**10,495**	**10,287**	**10,107**	**14,810**	**18,968**

FOREIGN INVESTMENT IN AUSTRALIA, BY COUNTRY—*continued*

($A million)

Country of investor	*Year*					
	1980–81	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*
INVESTMENT INCOME						
OECD—						
U.S.A.	1,415	1,280	828	1,707	2,037	2,438
Japan	213	325	478	799	1,224	1,646
Switzerland	93	81	150	175	213	275
EEC—						
U.K.	844	991	1,012	1,504	1,833	2,051
Other (*a*)	232	248	265	452	524	784
Total	*1,076*	*1,239*	*1,277*	*1,956*	*2,357*	*2,834*
Other OECD (*a*)	98	99	100	192	212	327
Total OECD	*2,895*	*3,024*	*2,833*	*4,829*	*6,043*	*7,521*
ASEAN (*b*)	36	120	288	470	739	694
Other countries (*b*)	85	123	244	327	440	393
International capital markets	—	—	5	38	124	555
International institutions	42	62	55	40	32	24
Unallocated	106	121	116	130	187	256
Total	**3,164**	**3,449**	**3,542**	**5,833**	**7,563**	**9,442**
LEVELS OF FOREIGN INVESTMENT						
OECD—						
U.S.A.	13,084	15,144	17,258	19,877	26,272	30,810
Japan	4,098	5,461	9,277	10,802	16,200	20,840
Switzerland	1,979	2,584	3,119	3,114	4,050	5,856
EEC—						
U.K.	14,580	15,383	18,596	20,443	25,946	29,054
Other (*a*)	5,679	6,516	8,066	8,710	11,097	15,169
Total	*20,259*	*21,899*	*26,662*	*29,153*	*37,043*	*44,223*
Other OECD (*a*)	1,808	1,646	2,010	2,844	3,801	4,541
Total OECD	*41,228*	*46,734*	*58,326*	*65,790*	*87,365*	*106,269*
ASEAN (*b*)	1,058	2,926	4,898	7,214	9,695	8,951
Other countries (*b*)	1,854	2,688	4,415	5,062	6,840	5,804
International capital markets	959	644	985	1,425	4,466	13,098
International institutions	337	437	533	390	341	365
Unallocated	1,908	1,965	1,876	2,017	2,527	4,111
Total	**47,343**	**55,394**	**71,034**	**81,897**	**111,234**	**138,599**

(*a*) Until 1985–86, Spain and Portugal are included in 'Other OECD'; from 1985–86 they are included in 'Other EEC'. (*b*) Until 1983–84, Brunei is included in 'Other countries'; from 1983–84 it is included in 'ASEAN'.

AUSTRALIAN INVESTMENT ABROAD, BY COUNTRY

($A million)

Country of investment	*Year*					
	1980–81	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*
CAPITAL TRANSACTIONS						
OECD—						
USA	1,147	1,578	2,228	2,186	−73	1,311
New Zealand	69	216	148	163	231	1
UK	−90	218	1	225	716	731
Other OECD (*a*)	108	185	1,264	968	1,521	1,000
Total OECD	*1,235*	*2,197*	*3,640*	*3,543*	*2,395*	*3,043*
ASEAN (*a*)	83	16	157	285	319	111
Papua New Guinea	−30	106	149	230	94	−107
Other countries (*b*)	238	−16	299	231	351	2,126
Unallocated	40	−32	−123	157	231	−390
Total	**1,566**	**2,271**	**4,122**	**4,446**	**3,390**	**4,784**

AUSTRALIAN INVESTMENT ABROAD, BY COUNTRY—*continued*

($A million)

Country of investment	*Year* 1980–81	1981–82	1982–83	1983–84	1984–85	1985–86
INVESTMENT INCOME						
OECD—						
USA	133	198	468	643	698	405
New Zealand	97	115	101	154	173	262
UK	96	15	107	122	96	271
Other OECD (*a*)	95	60	82	119	270	396
Total OECD	*421*	*388*	*758*	*1,037*	*1,237*	*1,334*
ASEAN (*b*)	75	91	93	150	101	154
Papua New Guinea	62	49	47	108	53	141
Other countries (*b*)	107	88	103	117	80	172
Unallocated	37	44	53	55	54	122
Total	**702**	**660**	**1,054**	**1,468**	**1,525**	**1,922**
LEVELS OF AUSTRALIAN INVESTMENT						
OECD—						
USA	3,119	5,082	8,106	10,195	12,233	13,121
New Zealand	542	664	781	928	927	1,311
UK	558	865	883	1,465	2,511	3,601
Other OECD (*a*)	1,339	1,538	3,019	3,939	6,399	9,848
Total OECD	*5,559*	*8,149*	*12,789*	*16,528*	*22,071*	*27,880*
ASEAN (*b*)	1,995	2,218	1,877	1,676	1,582	1,357
Papua New Guinea	509	878	850	1,016	994	746
Other countries (*b*)	1,838	1,905	2,478	3,060	3,977	7,038
Reserve Bank gold (*c*)	3,184	2,444	3,744	3,478	3,772	4,014
Unallocated	989	926	780	949	1,691	1,838
Total	**14,075**	**16,520**	**22,518**	**26,706**	**34,087**	**42,874**

(*a*) The foreign exchange part of reserve assets, with the exception of those held in the USA, are not available by country and are therefore included in 'Other OECD'. (*b*) Until 1983–84 Brunei is included in 'Other countries'; from 1983–84 it is included in 'ASEAN'. (*c*) Gold held by the Reserve Bank as part of reserve assets which cannot be allocated by country.

FOREIGN INVESTMENT IN AUSTRALIA, BY INDUSTRY(*a*)

	Industry of investment (ASIC division)	*Year—* 1980–81	1981–82	1982–83	1983–84	1984–85	1985–86
	CAPITAL TRANSACTIONS						
A	Agriculture, forestry, fishing and hunting	24	1	49	5	3	41
B	Mining	1,383	1,811	2,377	97	389	−1,391
C	Manufacturing	1,645	2,819	1,618	1,517	674	2,991
D	Electricity, gas and water	269	990	2,332	652	745	264
E	Construction	136	190	78	57	62	−59
F	Wholesale and retail trade	1,308	1,093	581	1,859	2,333	1,174
G	Transport and storage	230	655	419	327	402	392
I	Finance, property and business services(*b*)	854	1,924	1,602	3,604	6,917	11,128
J	Public administration, and defence(*c*)	1	644	1,032	971	2,629	3,961
H, K, L	Other industries(*d*)	88	166	195	463	294	242
M	Unallocated(*e*)	71	203	5	555	362	224
	Total all industries	**6,009**	**10,495**	**10,287**	**10,107**	**14,810**	**18,968**

FOREIGN INVESTMENT IN AUSTRALIA, BY INDUSTRY(*a*)—*continued*

		Year—					
	Industry of investment (ASIC division)	*1980–81*	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*
	INVESTMENT INCOME						
A	Agriculture, forestry, fishing and hunting	—	−20	−3	3	2	24
B	Mining	629	470	582	974	1,073	1,802
C	Manufacturing	730	997	455	1,271	1,544	1,558
D	Electricity, gas and water	68	122	230	306	424	492
E	Construction	51	23	27	38	31	69
F	Wholesale and retail trade	599	514	286	654	772	610
G	Transport and storage	80	145	189	258	262	370
I	Finance, property and business services(*b*)	449	593	965	1,314	1,860	1,831
J	Public administration, and defence(*c*)	374	373	541	668	927	1,507
H, K, L	Other industries(*d*)	13	22	24	51	102	112
M	Unallocated(*e*)	170	209	246	297	567	1,067
	Total all industries	**3,164**	**3,449**	**3,542**	**5,833**	**7,563**	**9,442**
	LEVELS OF FOREIGN INVESTMENT						
A	Agriculture, forestry, fishing and hunting	462	470	536	528	591	558
B	Mining	9,893	10,299	14,642	15,388	19,504	17,641
C	Manufacturing	11,483	13,081	15,861	17,688	20,933	25,381
D	Electricity, gas and water	847	1,878	4,441	5,112	7,534	8,350
E	Construction	474	559	747	849	1,200	1,100
F	Wholesale and retail trade	8,411	9,348	10,297	11,924	15,542	16,840
G	Transport and storage	1,412	2,114	2,671	3,020	4,267	5,286
I	Finance, property and business services(*b*)	7,468	9,187	11,171	14,836	23,470	36,302
J	Public administration, and defence(*c*)	5,090	6,065	8,081	8,861	13,273	19,930
H, K, L	Other industries(*d*)	411	554	817	1,243	1,855	2,055
M	Unallocated(*e*)	1,392	1,839	1,769	2,449	3,065	5,155
	Total all industries	**47,343**	**55,395**	**71,034**	**81,897**	**111,234**	**138,599**

(*a*) The industry categories shown are based on the 1983 edition of ASIC and relate to the predominant activity of the enterprise group receiving the investment funds. This is not necessarily the industry of the end use of the funds. (*b*) Includes the Reserve Bank and the State Government part of General Government. (*c*) Includes the Commonwealth Government part of General Government. (*d*) Consists of: Division H—Communications, Division K—Community services, and Division L—Recreation, personal and other services. (*e*) Details of accounts payable/prepayments received are not classified by industry and are therefore included in 'Unallocated'.

BALANCE OF PAYMENTS

Broadly speaking, the Australian balance of payments is a statistical statement designed to provide a systematic record of Australia's economic transactions with the rest of the world. It may be described as a system of consolidated accounts in which the accounting entity is the Australian economy and the entries refer to all economic transactions between residents of Australia and residents of the rest of the world (non-residents). Such a record is essential for the examination of influences which external factors have on the domestic economy. Balance of payments estimates have always assumed a particular importance in Australia due to the importance of these influences on the Australian economy.

Official estimates of Australia's balance of payments for the period 1928–29 were included in *Year Book* No. 24. Except for the War years 1939 to 1945, estimates have since been published at least annually.

Detailed estimates and brief descriptions of the various items included are provided in the annual publication *Balance of Payments, Australia* (5303.0) while comprehensive regional data is available in the annual microfiche publication *Balance of Payments, Australia—Regional Series on Microfiche* (5338.0). More timely estimates are provided in the quarterly publications *Balance of Payments, Australia* (5302.0) and *Balance of Payments, Australia—Historical Series on Microfiche* (5337.0), available approximately eight and ten weeks respectively after the end of each quarter. A monthly publication *Balance of Payments, Australia* (5301.0), showing preliminary estimates in less detail, is published about eleven working days after the end of each month. An ABS information paper, *Changes in the Presentation of Australian Balance of Payments Statistics* (5340.0), provides the basis for the current presentation of Australian balance of payments statistics and contains useful information on the classification and coverage of balance of payments transactions. Changes which have occurred since its publication on 23 December 1985 are described in 5303.0 for 1985–86.

Balance of payments statements cover a wide range of economic transactions which may be broadly divided into three categories. The first category comprises transactions in goods, services and income between residents of Australia and non-residents. The second category relates to financial transactions involving claims on and liabilities to the rest of the world. Because the statement is constructed on a double entry recording basis, a third category described as unrequited transfers is required to provide offsetting entries for one sided balance of payments transactions, such as gifts in cash and kind which have no 'quid pro quo'. Two changes not arising from transactions—specifically changes in Australia's official reserve assets arising from the allocation (or cancellation) of Special Drawing Rights (SDRs) by the International Monetary Fund (IMF) and the monetisation (or demonetisation) of gold—are included by convention, to make the accounts more analytically useful. The first and third of the above categories are combined in what is described as the current account and the second category together with the two changes not arising from transactions are shown separately in what is described as the capital account.

OFFICIAL RESERVE ASSETS AND AVERAGE EXCHANGE RATES

(*Source*: Reserve Bank of Australia for official reserve assets)

	Financial year ending 30 June—		
	1985	*1986*	*1987*
Levels of official reserve assets (*a*)		—$ million—	
Foreign exchange—			
United States dollars	5,802	3,403	6,571
Other	3,305	4,803	5,266
Special drawing rights	360	478	471
Reserve position in IMF	278	326	335
Gold	3,772	4,014	4,951
Total	**13,517**	**13,024**	**17,594**
Average exchange rates (*b*)—		—Units of foreign currency per $A—	
United States dollar	0.7754	0.6999	0.6636
United Kingdom pound	0.6360	0.4866	0.4352
West German mark	2.381	1.753	1.280
Japanese yen	193.12	140.48	101.37
Special drawing right	0.7821	0.6387	0.5345

(*a*) SDRs, and Australia's reserve position in the IMF are based on the IMF basket valuation for the SDR, which is published in terms of US dollars crossed with the representative rate for the Australian dollar in terms of the US dollar. Gold is valued at the average London gold price for the month, converted to Australian dollars at the market rate of exchange applying on the last trading day of the month. The foreign currency value of all other overseas assets has been based, where applicable, on market quotations. Accrued interest is normally taken into account. Conversion to Australian dollar equivalent is based on end of period market rates of exchange. (*b*) Derived by averaging exchange rates for trading days.

Under the internationally accepted conventions of the double entry system, credit entries, which have no arithmetic sign, are used to record exports of goods and services, income receivable and financial transactions involving either a reduction in the country's foreign financial assets or an increase in its foreign liabilities. Conversely, debit entries, identified by a minus sign (−), are used to record imports of goods and services, income payable and financial transactions involving either an increase in foreign financial assets or a decrease in foreign liabilities. Transactions in a double entry accounting system are reflected in pairs of equal credit and debit entries. For example, an export transaction for which payment is received through the banking system involves a credit entry for the export and a debit entry for the increase in foreign exchange assets. Similarly, the repayment of a foreign loan through the banking system involves a debit entry for a reduction in foreign liabilities and a credit entry for the decrease in foreign exchange assets. Any entries that are not automatically paired are matched by special offsetting entries. Such offsetting entries are required in the category of unrequited transfers for one sided balance of payments transactions. Offsets are also required for the other changes not arising from transactions referred to in the previous paragraph.

It follows that, in principle, the net sum of all credit and debit entries is zero. In practice, some transactions are not measured accurately (errors), while others are not measured at all (omissions). Equality between the sum of the credit and debit entries is brought about by the inclusion of a balancing item which reflects net errors and omissions. The balancing item is shown separately outside both current and capital accounts since it reflects the net effects of errors and omissions in both accounts.

In principle, transactions and other changes should be valued in the balance of payments at market prices. However, in practice, transactions are generally valued in the statistics at transactions prices because this basis provides the closest practical approximation to the market price principle. The transactions price is the price at which a transaction is recorded in the accounts of the transactors.

Transactions and other changes recorded in the balance of payments should, in principle, be recorded at the time of change of ownership (either actual or imputed). For the current account this is conceived as the time when ownership of goods changes, services are rendered, when undistributed income of direct investment enterprises is earned, and when interest and dividends become due for payment. In the case of unrequited transfers, those which are imposed by one party on another, such as taxes and fines, should ideally be recorded at the time they become due for payment without penalty; whereas others should be recorded when the goods, services, etc. to which they are offsets change ownership. For capital account transactions the time of change of ownership is, by convention, normally taken to be the time at which transactions are entered in the books of the transactors. Entries for loan drawings should be based on actual disbursements and not on commitments or authorisations. Entries for loan repayments should be recorded at the time they become due rather than on the actual payment date.

In practice, the nature of the available data sources is such that the time of recording of transactions will often differ from the time of change of ownership. This is particularly true in the case of transactions in goods which are, in the main, recorded at the time that administrative records relating to the movement of the goods across the customs frontier are processed. Where practical, timing adjustments are made for transactions in certain goods to ensure that they are recorded in the time period in which change of ownership occurs.

In the tables that follow, global estimates of the current and capital accounts of the Australian balance of payments are presented. The current account table shows entries on a gross basis, i.e. credit and debit entries for each item are shown separately. In contrast, the capital account table is recorded on a net basis. This means credit and debit entries for each item are combined to arrive at a single net result (either a credit or debit).

The current account records transactions between Australian residents and non-residents in merchandise, other goods and services, income and unrequited transfers. In principle, the items included in merchandise should include all movable goods, with a few exceptions, the ownership of which changes from residents to non-residents (exports) and from non-residents to residents (imports). Services covers services rendered by Australian residents to non-residents (credits) and by non-residents to residents (debits), together with transactions in a few types of goods (e.g. goods purchased by travellers). Income covers income earned by Australian residents from non-residents (credits) or by non-residents from residents (debits).

It includes investment income (e.g. dividends and interest), other property income (e.g. royalties) and labour income (e.g. wages and salaries). Unrequited transfers covers the offsetting entries required by the double-entry system of accounting when resources (goods, services and financial assets) are provided, without something of economic value being received in return, by non-residents to Australian residents (offsetting credits required) and by residents to non-residents (offsetting debits required). It includes foreign aid, migrants' transfers, gifts, donations, pensions and taxes.

The capital account records transactions in Australia's foreign financial assets and liabilities, including the creation and extinction of claims on or by the rest of the world and a few specified other changes. Capital transactions are grouped into two broad institutional sectors named official and non-official, with the former split into general government and Reserve Bank. The general government sector comprises transactions of the Commonwealth, the States, local government authorities, and statutory bodies, but it excludes the transactions of public business enterprises. The Reserve Bank sector covers transactions attributed to the central bank. The non-official sector covers transactions of all other resident entities including private and government-owned banks, private and public business enterprises, and households.

CURRENT ACCOUNT

($ million)

	1984-85	*1985-86*	*1986-87*
Current transactions—			
Goods and services—			
Merchandise *(a)*—			
Exports f.o.b.	29,212	32,200	35,377
Imports f.o.b.	−30,093	−35,622	−37,293
Balance on merchandise trade	*−881*	*−3,422*	*−1,916*
Services—			
Credits—			
Shipment	395	379	427
Other transportation	2,092	2,480	2,879
Travel	1,359	1,801	2,528
Other services	1,088	1,215	1,399
Total services credits	4,934	5,875	7,233
Debits—			
Shipment	−2,539	−2,827	−2,847
Other transportation	−2,093	−2,232	−2,106
Travel	−2,618	−2,730	−2,957
Other services	−1,672	−1,975	−2,232
Total services debits	−8,922	−9,764	−10,142
Net services	*−3,988*	*−3,889*	*−2,909*
Balance on goods and services	*−4,869*	*−7,311*	*−4,825*
Income—			
Credits—			
Property income—			
Reinvested earnings	315	640	720
Other	1,377	1,483	1,555
Labour and other income	209	213	234
Total income credits	*1,901*	*2,336*	*2,509*
Debits—			
Property income—			
Reinvested earnings	−594	−888	−650
Other	−7,712	−9,273	−11,692
Labour and other income	−165	−196	−253
Total income debits	*−8,471*	*−10,357*	*−12,595*
Net income	*−6,570*	*−8,021*	*−10,086*
Unrequited transfers—			
Credits	2,016	2,532	3,041
Debits	−1,654	−1,700	−1,693
Net unrequited transfers	*362*	*832*	*1,348*
Balance on current account	**−11,077**	**−14,500**	**−13,563**

(*a*) Balance of payments basis

CAPITAL ACCOUNT AND BALANCING ITEM

($ million)

	1984-85	1985-86	1986-87
Net capital transactions			
Official—			
General government—			
Foreign investment in Australia—			
Borrowing	2,675	3,338	3,880
Other	−46	30	−12
Total	2,628	3,368	3,868
Australian investment abroad	−270	−192	−416
Total general government	*2,358*	*3,176*	*3,452*
Reserve Bank—			
Foreign investment in Australia	−10	−16	18
Australian investment abroad—			
Reserve assets	1,520	2,140	−3,394
Other	—	—	—
Total	1,520	2,140	−3,394
Total Reserve Bank	*1,510*	*2,124*	*−3,376*
Total official	*3,868*	*5,300*	*76*
Non-official—			
Foreign investment in Australia—			
Direct investment—			
Reinvestment of earnings	610	936	650
Other	2,001	883	3,362
Portfolio and other investment	10,662	14,681	17,601
Total foreign investment in Australia	*13,273*	*16,500*	*21,613*
Australian investment abroad—			
Direct investment—			
Reinvestment of earnings	−315	−616	−720
Other	−2,062	−1,512	−3,216
Portfolio and other investment	−2,571	−5,722	−5,039
Total Australian investment abroad	*−4,948*	*−7,850*	*−8,975*
Total non-official	*8,326*	*8,650*	*12,638*
Balance on capital account	**12,193**	**13,950**	**12,714**
Balancing item	*−1,116*	*550*	*849*

VALUES OF EXPORTS AND IMPORTS OF GOODS AND SERVICES (BALANCE OF PAYMENTS BASIS) AT CONSTANT PRICES

The following tables show annual values of Australian exports and imports of goods and services at current and constant (average 1979–80) prices. These estimates are compiled on a balance of payments basis within the framework of the Australian Export Commodity Classification (AECC) and the Australian Import Commodity Classification (AICC). Quarterly figures in original and seasonally adjusted terms are published regularly in the publication *Balance of Payments, Australia* (5302.0).

The current price value of a transaction may be expressed conceptually as the product of a price and a quantity. The value of the transaction at constant prices may then be thought of as being derived by substituting, for the current price, the corresponding price in the chosen base year. There are, however, many transactions recorded in statistics of overseas trade for which it is not possible to apply such an approach. In such cases it is necessary to make assumptions and approximations (e.g. revaluing by means of the price index which is considered to be most closely related to the commodity involved). The published estimates at constant prices should be viewed in this light.

Estimates at current prices are often divided by their corresponding estimates at constant prices to give measures of price change, which are generally referred to as implicit price deflators (IPDs). IPDs are derived measures and are not normally the direct price measures by which current price estimates are converted to estimates at constant prices. A more detailed discussion of the nature of IPDs is presented in Appendix B of the publication *Australian National Accounts: Concepts, Sources and Methods* (5216.0)

Merchandise (Balance of Payments basis)

The published components of merchandise exports and imports of goods f.o.b. consist of varying numbers of AECC and AICC divisions and/or sections as shown below.

Exports	*Section or division of AECC*	*Imports*	*Section or division of AICC*
Rural—		Food, beverages and tobacco	0, 1
Meat and meat preparations	01	Fuels	3
Cereal grains and cereal preparations	04	Basic materials	2, 4
Sugar, sugar preparations and honey	06	Chemicals (incl. plastics)	5
Wool and sheepskins	Parts of 21, 26 and 65	Textiles, fabrics, etc.	65
		Metals and metal manufactures	67 to 69
Other rural	00, 02, 03, 05, 07 to 09, 21 (part), 22 to 25, 26 (part), 29, 4	Machinery and transport equipment	7
		Other imports	61 to 64, 66 8, 9
Non-rural—			
Metal ores and minerals	27, 28		
Mineral fuels—			
Coal, coke and briquettes	32		
Other	33, 34		
Metals and metal manufactures	67 to 69		
Machinery and transport equipment	7		
Other non-rural	1, 5, 61 to 64, 65 (part), 66, 8, 9		

Services

Services covers services rendered by Australian residents to non-residents (credits) and by non-residents to residents (debits), together with transactions in a few types of goods (eg goods purchased by travellers).

Exogenous and endogenous imports

Exogenous imports comprise a group of imported goods which it has been found useful to identify separately in economic analysis because the transactions in these goods are lumpy, subject to government arrangements or significantly affected by factors other than the general level of economic activity in Australia. Exogenous imports include fuels; ships, aircraft and certain other large items of equipment acquired by selected public and private sector trading enterprises; defence goods and certain other government goods.

Endogenous imports comprise imports of all goods other than those regarded as exogenous.

Endogenous imports are classified into three classes—*consumption goods, capital goods* and *other goods*—according to the United Nations' classification by broad economic categories (BEC). *Other goods* covers the BEC class *intermediate goods* and the residual BEC category *goods not elsewhere specified.* The *classes* consist of the following BEC categories (excluding goods defined as exogenous) shown below.

Consumption goods—

Food and beverages, primary, mainly for household consumption (112)
Food and beverages, processed, mainly for household consumption (122)
Passenger motor vehicles (51)
Transport equipment, non-industrial (522)
Consumer goods, not elsewhere specified (6)

Capital goods—

Capital goods (except transport equipment) (41)
Transport equipment, industrial (521)

Other goods—

Food and beverages, primary, mainly for industry (111)
Food and beverages, processed, mainly for industry (121)
Industrial supplies not elsewhere specified (2)
Parts and accessories of capital goods (except transport equipment) (42)
Parts and accessories of transport equipment (53)
Goods not elsewhere specified (7)

EXPORTS OF GOODS AND SERVICES (BALANCE OF PAYMENTS BASIS) AT CURRENT AND AVERAGE 1979-80 PRICES

($ million)

	1981–82	*1982–83*	*1983–84*	*1984–85*	*1985–86*	*1986–87*
AT CURRENT PRICES						
Rural exports f.o.b.						
Meat and meat preparations	1,380	1,675	1,393	1,371	1,699	2,246
Cereal grains and cereal preparations	2,484	1,849	2,773	3,855	3,880	2,759
Sugar, sugar preparations and honey	782	608	676	615	646	708
Wool and sheepskins	1,874	1,789	2,000	2,573	3,061	3,889
Other (dairy produce, fruit, etc.)	1,752	1,984	2,132	2,426	2,958	3,523
Total rural	*8,272*	*7,905*	*8,974*	*10,840*	*12,244*	*13,125*
Non-rural exports f.o.b.						
Metal ores and minerals	3,456	3,852	4,229	4,722	5,005	4,949
Mineral fuels—						
Coal, coke and briquettes	2,295	3,078	3,338	4,665	5,240	5,454
Other	867	1,058	1,437	2,360	2,299	1,511
Metals and metal manufactures	1,627	1,912	2,192	2,512	2,717	3,145
Machinery and transport equipment	1,050	1,150	1,379	1,654	1,614	2,627
Other non-rural	1,513	1,701	2,133	2,459	3,081	4,566
Total non-rural	*10,808*	*12,751*	*14,708*	*18,372*	*19,956*	*22,252*
Total exports f.o.b.	*19,080*	*20,656*	*23,682*	*29,212*	*32,200*	*35,377*
Exports of services	*3,805*	*4,029*	*4,328*	*4,934*	*5,875*	*7,233*
Total exports of goods and services	**22,885**	**24,685**	**28,010**	**34,146**	**38,075**	**42,610**
AT AVERAGE 1979–80 PRICES						
Rural exports f.o.b.						
Meat and meat preparations	1,595	1,788	1,313	1,220	1,457	1,727
Cereal grains and cereal preparations	2,237	1,607	2,239	3,028	3,108	2,669
Sugar, sugar preparations and honey	787	800	772	815	854	834
Wool and sheepskins	1,701	1,603	1,700	1,964	2,161	2,407
Other (dairy produce, fruit, etc.)	1,648	1,736	1,660	1,784	2,129	2,318
Total rural	*7,968*	*7,534*	*7,684*	*8,811*	*9,709*	*9,955*
Non-rural exports f.o.b.						
Metal ores and minerals	2,823	2,911	3,202	3,244	3,297	3,273
Mineral fuels—						
Coal, coke and briquettes	1,797	2,049	2,394	3,073	3,214	3,426
Other	748	811	1,099	1,538	1,509	1,525
Metals and metal manufactures	1,952	2,213	2,231	2,354	2,484	2,500
Machinery and transport equipment	854	833	936	1,015	922	1,342
Other non-rural	1,476	1,545	1,850	2,155	2,459	3,190
Total non-rural	*9,650*	*10,362*	*11,712*	*13,380*	*13,885*	*15 256*
Total exports f.o.b.	*17,618*	*17,896*	*19,396*	*22,191*	*23,594*	*25,211*
Exports of services	*3,190*	*3,094*	*3,147*	*3,459*	*3,717*	*4,153*
Total exports of goods and services	**20,808**	**20,990**	**22,543**	**25,650**	**27,311**	**29,364**

IMPORTS OF GOODS AND SERVICES (BALANCE OF PAYMENTS BASIS) AT CURRENT AND AVERAGE 1979–80 PRICES

($ million)

	1981–82	*1982–83*	*1983–84*	*1984–85*	*1985–86*	*1986–87*
AT CURRENT PRICES						
Food, beverages and tobacco	902	1,017	1,211	1,476	1,705	1,938
Fuels	2,987	3,087	2,209	2,321	1,909	1,748
Basic materials	846	728	873	1,052	1,109	1,176
Chemicals (incl. plastics)	1,813	1,769	2,155	2,567	3,003	3,470
Textiles, fabrics, etc.	1,094	1,009	1,304	1,452	1,669	1,832
Metals and metal manufactures	1,357	1,193	1,143	1,462	1,695	1,848
Machinery and transport equipment	9,012	8,595	9,261	12,820	16,188	15,988
Other imports	4,357	4,307	5,341	6,943	8,344	9,293
Total imports f.o.b.	*22,368*	*21,705*	*23,497*	*30,093*	*35,622*	*37,293*
of which:						
Exogenous	4,018	4,097	3,098	4,237	4,539	4,498
Endogenous—						
Consumption goods	4,525	4,742	5,616	6,918	8,123	8,311
Capital goods	4,637	4,357	4,936	6,567	8,092	8,075
Other goods	9,188	8,509	9,847	12,371	14,868	16,409
Total endogenous	18,350	17,608	20,399	25,856	31,083	32,795
Imports of services	*6,308*	*6,813*	*7,267*	*8,922*	*9,764*	*10,142*
Total imports of goods and services	**28,676**	**28,518**	**30,764**	**39,015**	**45,386**	**47,435**
AT AVERAGE 1979–80 PRICES						
Food, beverages and tobacco	927	935	1,051	1,132	1,145	1,177
Fuels	2,001	1,904	1,451	1,409	1,260	1,715
Basic materials	839	690	793	864	818	801
Chemicals (incl. plastics)	1,596	1,456	1,756	1,929	1,973	2,060
Textiles, fabrics, etc.	1,077	943	1,171	1,142	1,129	1,091
Metals and metal manufactures	1,233	1,001	950	1,097	1,087	1,067
Machinery and transport equipment	8,097	7,074	7,271	9,040	9,486	8,016
Other imports	3,987	3,625	4,300	5,100	5,183	5,062
Total imports f.o.b.	*19,757*	*17,628*	*18,743*	*21,715*	*22,081*	*20,989*
of which:						
Exogenous	2,896	2,652	2,070	2,504	2,505	2,921
Endogenous—						
Consumption goods	4,289	4,247	4,821	5,386	5,286	4,782
Capital goods	4,226	3,556	3,802	4,662	4,844	4,114
Other goods	8,346	7,173	8,050	9,161	9,446	9,172
Total endogenous	16,861	14,976	16,673	19,209	19,576	18,068
Imports of services	*5,632*	*5,561*	*5,797*	*6,573*	*6,227*	*5,974*
Total imports of goods and services	**25,389**	**23,189**	**24,540**	**28,286**	**28,308**	**26,963**

FOREIGN PARTICIPATION STATISTICS

Foreign participation statistics include statistics on both foreign ownership and control of enterprises in Australia. Foreign ownership statistics provide a measure of the beneficial equity interest held by foreign residents (individuals and companies) in enterprises in Australia. Foreign control statistics provide a measure of the potential control, through ownership of voting shares, that foreign residents may have over the key policy decisions of enterprises in Australia. Following the termination of a previous program of studies in 1978, a program of foreign participation studies of industries and economic activities was re-introduced in 1982.

Brief explanatory notes and separate summary tables of ownership and control statistics are presented in the following tables for the most recent studies undertaken in the current program.

For agriculture, separate measures are provided for ownership of agricultural land and for ownership and control of agricultural activity. The statistics presented on foreign ownership of agricultural land are based on the ownership characteristics of the landowners. The statistics on foreign ownership and control of agricultural activity, on the other hand, are based on the ownership characteristics of the businesses operating on agricultural land. The owners of any particular parcel of land and the business operating on that land can, of course, be different entities.

Scope and methodology

The scope of each study together with the methodology used is outlined in the individual foreign participation publications listed in the bibliography at the end of this chapter. The statistical unit used in the compilation of the statistics is also defined in each publication. Generally, foreign participation characteristics for statistical units in each study were derived from information on ownership links collected from enterprises included in the biennial ABS Survey of Shareholdings.

Measurement of ownership and control

Foreign ownership is measured in terms of the beneficial equity interest (through ownership links) of all identified foreign residents:

(i) in enterprises operating in Australia, or

(ii) in agricultural land.

In order to calculate the beneficial equity interests of foreign residents whose interests are held through other enterprises in Australia, all relevant ownership links are multiplied together. *Australian ownership* is all ownership not identified as foreign ownership.

To measure the aggregate levels of foreign and Australian ownership in a particular industry, the amount reported for the selected data item (such as value added, premiums received, assets, gross value of agricultural commodities produced or area of agricultural land) for each statistical unit is apportioned between foreign and Australian ownership in proportion to percentages of foreign and Australian ownership in that unit. Data for each unit are then aggregated to obtain totals of foreign and Australian ownership.

In *control statistics*, enterprises are classified to one of four categories of control: foreign control; joint foreign and Australian control; naturalised or naturalising; and Australian control.

An enterprise is classified to *foreign control* if it has not been granted naturalised or naturalising status under the government's foreign investment policy and if a foreign investor (individual, company or group of related companies) or a foreign controlled enterprise holds at least 25 per cent of its voting shares and there are no equal or larger shareholdings by an Australian resident, an Australian controlled enterprise or a joint foreign and Australian controlled enterprise. Enterprises in which there are no dominant investors holding at least 25 per cent of the voting shares but all the voting shares are held by foreign residents are also classified to *foreign control.*

An enterprise is classified to *joint foreign and Australian control* if it does not have naturalised or naturalising status and either the single largest shareholder has 25 per cent or more of the voting shares and is itself joint foreign and Australian controlled or there are two or more equally large investors (there being no single larger investor) each with 25 per cent or more of the voting shares in the enterprise and:

(i) at least one of these investors is either a foreign resident or foreign controlled enterprise and at least one of these investors is either an Australian resident individual or an Australian controlled enterprise; or

(ii) at least one of these investors is joint foreign and Australian controlled.

An enterprise is classified to *naturalised or naturalising* if it had such status (at the reference period pertinent to each study) under the government's foreign investment policy and would otherwise be classified to either foreign control or joint foreign and Australian control.

All enterprises not classified to foreign control, joint foreign and Australian control, or naturalised or naturalising are classified to *Australian control.*

To measure the levels of control in an industry (or economic activity) for each of these four categories of control, the whole of the amount reported for the selected data item (such

OWNERSHIP SUMMARY BY COUNTRY OF OWNERSHIP

				Foreign ownership						
Industry/activity	*Reference period*	*Ownership measured in terms of:*	*Total value of measure used*	*U.S.A.*	*U.K.*	*Other E.E.C.(a)*	*Other*	*Total*	*Australian ownership*	*Total*
			$ million			—per cent—				
Manufacturing industry	1982–83	value added	31,059.1	12.2	12.7	1.8	6.2	32.9	67.1	100.0
Transport industry	1983–84	value added	6,959.7	1.0	2.9	0.4	0.9	5.1	94.9	100.0
Life insurance industry	1983–84	premiums received	3,306.8	2.7	20.6	3.2	13.8	40.3	59.7	100.0
General insurance industry	1983–84	premiums receivable	5,934.8	2.5	17.0	4.9	9.8	34.1	65.9	100.0
Agriculture—										
Agricultural activity	1983–84	gross value of agricultural commodities produced	15,317.2	0.5	0.7	0.5		1.8	98.2	100.0
			million hectares							
Agricultural land	at 31 March 1984	agricultural land area	486.6	1.8	2.4	0.2	1.4	5.9	94.1	100.0
			$ million							
Mining industry	1984–85	value added	10,609.9	21.7	13.3	1.9	7.8	44.7	55.3	100.0
Private sector construction industry	1984–85	value added	7,950.5	1.4	3.6	2.8	1.6	9.6	90.4	100.0
Banking industry	June 1986	assets	154,587.8	5.3	7.5	8.2		21.0	79.0	100.0
Registered financial corporations	June 1986	assets	105,090.9	11.4	10.8	13.1		35.4	64.6	100.0

(*a*) Belgium, Denmark, France, Federal Republic of Germany, Greece, Ireland, Italy, Luxembourg and Netherlands.

CONTROL SUMMARY BY COUNTRY OF CONTROL

Industry/activity	Reference period	Control measured in terms of:	Total value of measure used	Foreign control					Joint foreign and Australian Control	Naturalised and Naturalising	Australian Control	Total
				U.S.A.	U.K.	Other E.E.C. (a)	Other	Total				
			$ million	—per cent—								
Manufacturing industry	1982–83	value added	31,059.1	12.4	12.9	1.9	4.9	32.1	1.2	1.3	65.4	100.0
New fixed capital expenditure by private enterprises, selected industries	1982–83	new fixed capital expenditure	15,805.6	15.6	10.5	1.1	2.7	29.9	7.1	2.0	61.0	100.0
Transport industry	1983–84	value added	6,959.7	0.4	2.3	0.4	0.2	3.4	0.1		96.5	100.0
Life insurance industry	1983–84	premiums received	3,306.8	2.9	15.7	4.6	3.4	26.6	(b) n.a.	..	73.4	100.0
General insurance industry	1983–84	premiums receivable	5,934.8	2.4	15.6	5.7	9.0	32.6	3.3	..	64.1	100.0
Agricultural activity	1983–84	gross value of agricultural commodities produced	15,317.2	0.5	0.5	0.5		1.5	0.2		98.2	100.0
Mining industry	1984–85	value added	10,609.9	7.9	5.8	1.5		15.2	24.8	11.5	48.5	100.0
Private sector construction industry	1984–85	value added	7,950.5	1.1	3.2	4.7	1.0	10.0	0.4	..	89.6	100.0
Private mineral exploration other than for petroleum	1984–85	exploration expenditure	437.3	14.6	13.2	4.8	3.2	35.9	16.7		47.5	100.0
Private petroleum exploration	1984-85	exploration expenditure	803.2	22.3	7.9	3.9	3.2	37.3	6.2		56.5	100.0
Imports	1984–85	value of imports	29,050.8	18.9	12.5	4.4	17.4	53.2	0.5	0.2	46.1	100.0
Research and experimental development	1984–85	expenditure	720.8	15.3	12.3	2.3	8.6	38.6	1.2	6.2	54.0	100.0
Banking industry	June 1986	assets	154,587.8	1.1	1.1	3.0		5.1	1.3	..	93.6	100.0
Registered financial corporations	June 1986	assets	105,090.9	10.6	9.0	9.2		28.9	2.4	..	68.7	100.0

(a) Belgium, Denmark, France, Federal Republic of Germany, Greece, Ireland, Italy, Luxembourg and Netherlands. (b) Only one enterprise in this category was identified. It has been included in the statistics for the foreign control category.

as value added, type of expenditure, premiums received, assets, gross value of agricultural commodities produced or value of imports) for each statistical unit is allocated to the control category of that unit. Data for each unit are then aggregated to obtain totals for the industry (economic activity) attributable to each of the four control categories.

Country of ownership and control

In the previous two tables the classifications by country of foreign ownership or control are based on the country of domicile of the immediate foreign investor which may not be the country of domicile of the ultimate foreign investor.

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Microfiche service: Foreign trade statistics are also available on microfiche in a variety of tabular formats. Each tabular format covers all commodities exported or imported at various levels of aggregation. This service is recommended where the subscriber wishes to obtain foreign trade details for a large number of commodities. Details of this service are contained in the ABS information paper *Foreign Trade and Shipping Statistics: Microfiche Service* (5483.0).

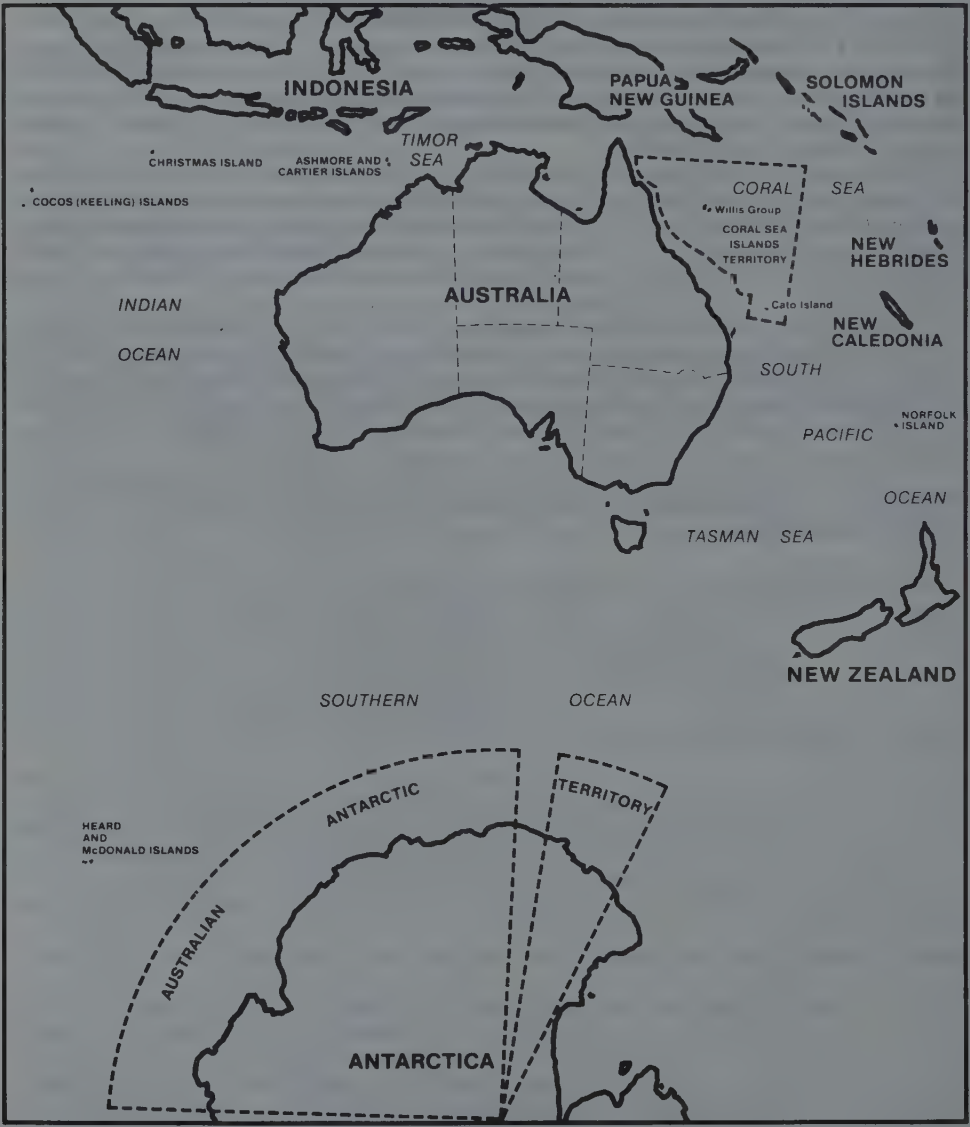
Magnetic tape service: Statistics for imports, exports and import clearances are available on 9-track magnetic tape approximately 4 weeks after the end of the reference period. This service is recommended where the subscriber wishes to obtain trade data at the most detailed level. Documentation regarding the content and structure of these tapes is contained in the ABS information paper *Foreign Trade and Shipping Statistics: Magnetic Tape Service* (5484.0).

To meet subscribers' needs, special returns, microfiche and data on magnetic tape are available on a monthly, quarterly or less frequent basis. Payment in advance is required for each of these services.

CHAPTER TWENTY-SEVEN

THE TERRITORIES OF AUSTRALIA

The internal Territories of Australia are the Northern Territory and the Australian Capital Territory including Jervis Bay. The seven external Territories under Australian administration


INDONESIA
PAPUA NEW GUINEA
SOLOMON ISLANDS
TIMOR SEA
CHRISTMAS ISLAND
ASHMORE AND CARTIER ISLANDS
COCOS (KEELING) ISLANDS
CORAL SEA
Willis Group
CORAL SEA ISLANDS TERRITORY
NEW HEBRIDES
AUSTRALIA
Cato Island
NEW CALEDONIA
INDIAN OCEAN
SOUTH PACIFIC OCEAN
NORFOLK ISLAND
TASMAN SEA
NEW ZEALAND
SOUTHERN OCEAN
AUSTRALIAN ANTARCTIC TERRITORY
HEARD AND McDONALD ISLANDS
ANTARCTICA

Source—Promotion Australia

are: Norfolk Island; the Territory of Heard and McDonald Islands; the Australian Antarctic Territory; the Territory of Cocos (Keeling) Islands; the Territory of Christmas Island; the Coral Sea Islands Territory and the Territory of Ashmore and Cartier Islands.

More detailed statistics and additional descriptive matter are to be found in the Annual Reports of the administrations of the various Territories and in the *Northern Territory Statistical Summary* (1306.7) and the *Australian Capital Territory Statistical Summary* (1307.8) issued by the Australian Bureau of Statistics. Statistics for the Northern Territory and the Australian Capital Territory are also included in chapters dealing with particular subjects.

THE NORTHERN TERRITORY

General description

The total area of the Northern Territory is 1,346,200 square kilometres. The seat of Government is Darwin on the north coast. The estimated resident population of the Darwin Statistical Division at 30 June 1986 was 72,937.

Northern Territory self-government

The Northern Territory was established as a self-governing territory by the *Northern Territory (Self-Government) Act 1978* of the Commonwealth. Under that Act, the Commonwealth transferred most of its powers to the Government of the Northern Territory.

In all fields of transferred power, the Government is similar to that of the Australian States, with some differences in titles, for example there is an Administrator instead of a Governor and a Chief Minister instead of a Premier.

The Administrator, appointed by the Governor-General, has responsibility for administering the Government of the Northern Territory. The Administrator is advised by an Executive Council composed of all Northern Territory Ministers, led by the Chief Minister, and acts with the advice of the Executive Council on all matters transferred to the Northern Territory. The Administrator acts with Commonwealth advice on matters not transferred.

The Legislative Assembly of the Northern Territory is the Northern Territory's Parliament. It has 25 Members, who are elected for a period of four years. A Speaker is elected by, and Ministers are appointed from, the Members of the Legislative Assembly. A Ministry of nine is responsible for the administration of all transferred powers and acts through a number of departments and authorities, most of which are staffed by the Northern Territory Public Service.

Local government was established in Darwin in 1957 and later in regional centres. Municipal councils are elected by universal adult franchise, with elections at intervals of not more than three years. Provision has been made for a limited form of local government by smaller communities. There has been considerable interest in this provision, particularly in Aboriginal communities.

Development of administration

Upon the extension of New South Wales westwards to the 129th east meridian in 1825, the Northern Territory was incorporated in that colony, but in 1863 it was annexed by Royal Letters Patent to the province of South Australia. With the adjacent islands, it was transferred to the Commonwealth on 1 January 1911.

From 1911 until 30 June 1978, the Commonwealth administered the Northern Territory under the provisions of the *Northern Territory (Administration) Act 1910*, as amended. The Act provided for an Administrator, appointed by the Governor-General, to administer the Northern Territory on behalf of the Commonwealth Government.

By amendment of the Act in 1947, a Legislative Council comprising seven official and six elected members, with the Administrator as President, was created to make laws for the peace, order and good government of the Northern Territory. Composition of the Legislative Council was changed by further amendment in 1959 to provide for six official members, three nominated non-official members and eight elected members, and for an Administrator's Council to advise the Administrator. The Act was further amended in 1974 to provide for a Legislative Assembly of 19 elected Members and for a Speaker to be one of those Members, elected by the Members.

Laws passed by the Assembly were presented to the Administrator for assent. The Administrator was required to reserve laws on specific subjects for the pleasure of the Governor-General who was empowered to assent, withhold his assent or refuse his assent in part to such laws, or to return them to the Assembly with recommended amendments.

On 1 January 1977, the Commonwealth Government began a program of transferring executive powers to the Legislative Assembly by amendment of the Northern Territory (Administration) Act. A separate Northern Territory Public Service was created and administrative powers were transferred. Positions of Executive Member were created under the Act. These Members exercised ministerial-type powers in respect of transferred matters such as policy, fire brigade, local government and correctional services. An Executive Council replaced the Administrator's Council.

On 1 July 1978, the Northern Territory (Self-Government) Act came into force and established the Northern Territory as a body politic under the Crown. This Act also provided for the appointment of an Administrator by the Governor-General. It created offices of Ministers of the Northern Territory who, together with the Administrator, formed the Executive Council of the Northern Territory. A Northern Territory Government, comprising Ministers of the Northern Territory, was established with full responsibility for a range of State-type transferred powers administered through a Northern Territory Public Service and a Treasury. A Northern Territory flag was raised for the first time on 1 July 1978, the date upon which the Northern Territory became self-governing.

Major matters not transferred on 1 July 1978 were the mining of uranium and other prescribed substances, Aboriginal land matters, health, education and the Supreme Court. Powers in respect of health, education and the Supreme Court were progressively transferred from the Commonwealth to the Northern Territory Government during 1979.

At the end of 1979, the only major powers retained by the Commonwealth in the Northern Territory were those relating to rights in respect of Aboriginal land and the mining of uranium and other prescribed substances. Since the end of 1979, the Northern Territory, although remaining a Territory of the Commonwealth and still subject to Commonwealth laws made under Section 122 of the Constitution, is in most respects a self-governing Territory.

The Northern Territory is represented in the Parliaments of the Commonwealth by one Member in the House of Representatives and two Senators, whose terms of office coincide with that of the member in the House of Representatives. Since October 1984 the Cocos (Keeling) Islands have been included in the Northern Territory electorate for the purposes of all federal elections and referenda.

Physical geography and climate

The Northern Territory has a mainland coastline that is 5,100 kilometres long, with a further 2,100 kilometres of coast around off-lying islands. A broad, shallow, low-gradient continental shelf, being less than 200 metres deep, runs for more than 140 kilometres offshore. Most of the coast is low-lying; cliffs, rarely exceeding 20 metres high, have been cut into weathered lateritic rocks, and there are active and cemented dunes, more than 50 metres high, on the western shore of the Gulf of Carpentaria. Coral reefs are best developed on the north coast and around off-lying islands. Most of the coastline consists of unvegetated mudflats, or mangrove swamps, which cover an area of approximately 2,400 square kilometres. The large tidal range of the north-western coast and the low gradient of the coastal lowlands means that some of the larger rivers are tidal for more than 100 kilometres upstream from their mouth. There are extensive seasonally-flooded coastal plains and black soil plains fringing the river systems, between the dissected lateritic lowlands, along much of the coast to the north-west and around the Gulf of Carpentaria.

Inland, the coastal lowlands merge into the dissected sandstone plateaux of Arnhem Land to the north, the granitic and sandstone Ord-Victoria river plateaux to the west, with rounded ridges of largely metamorphic rocks between those plateaux. The central section of the Northern Territory is formed of shallowly dissected lateritised sandstone ridges and sandplains. To the west there are the Lander dunefields with east-west trending longitudinal dunes, and to the east the black clay plains and limestone or sandstone rises of the Barkly Tablelands. The southern end of the Northern Territory is dominated by the Central Australian Ranges. These consist of granitic, sandstone and quartzitic ridges, separated by sandplains or stony lowlands. The folded Macdonnell Ranges, running east-west, contain the highest point in the Territory, Mount Zeil, 1,511 metres high. To the south-east there is a part of the Simpson Desert with north-west south-east trending longitudinal dunes.

There are two main climatic divisions: the wet season from November to April; and the dry season from May to October. The changes of weather are uniform and regular. Nearly all the rainfall occurs in the summer months.

Fauna and flora of the Northern Territory

The Northern Territory contains an immense array of faunal habitats, from arid deserts to the wet/dry tropics. Consequently, the fauna is characterised by both high species richness and species abundance, many of which are endemic to the Territory.

There are about 378 species of birds, 264 reptiles, 125 mammals, 42 amphibians and 100,000 species of insects, well represented by termites, ants and butterflies. In contrast to these distinctly Australian terrestrial fauna, the marine fauna of the Northern Territory is very similar to the Indo-Malay Archipelago immediately to the north.

The Northern Territory is famous for its herds of wild buffalo although introduced from Timor. There are also feral herds of banteng cattle, Timor ponies and samba deer which are confined to the Cobourg Peninsula.

The most distinct faunal region is centred on the sandstone escarpment of Arnhemland, including Kakadu National Park which is on the World Heritage List. Amongst the endemic fauna to be found there are the black wallaroo, the white-striped sheath-tailed bat, the black-banded pigeon and the white-throated and Carpentaria grass-wrens. There are also endemic fish (rainbow and primitive archer fish), insects (Leichhardt's grasshopper), and reptiles (Oenpelli python, a gekko, a stunted variety of Johnston's freshwater crocodile).

In the central deserts surrounding Alice Springs, the harsh climate promotes crypticism among the smaller native species, but plagues of rodents and small marsupials occasionally emerge following suitable rainfall. Distinctly Australian species include the bilby (a bandicoot), the thorny mountain devil (a lizard) and the Major Mitchell cockatoo. Snakes, many of which are venomous, are common throughout all habitats in the Territory. Introduced pests, especially the rabbit, can become extremely abundant in arid areas and constitute a serious threat to the pastoral industry. Similarly, the introduced fox and feral cats have been implicated in the decline or extinction of several native species.

Northern Territory vegetation is Australian in character although there is a significant component of the flora derived from the Indo-Malayan regions. In the 'Top End', the monsoon climate, the frequent fires associated with it and the poor soils, support eucalypt forests with open savanna understoreys. Pockets of monsoon forests, similar to rainforest, occur on sites with superior moisture supply during the seven month drought. Associated with the lower rainfall further inland, the height and density of forests decreases to form low woodlands. On the Barkly Tablelands and parts of the Victoria Rivers district, savanna with scattered shrubs occur. On the sandy plains of the interior and on the rugged sandstone escarpments, spinifex grasses predominate with occasional stunted shrubs. The country surrounding Alice Springs carries acacia scrub called 'mulga'. Where this community has been severely disturbed it is replaced by spinifex. There are some 180 different families of vascular plants in the Northern Territory, with over 3,000 species. However little of the area has been well studied and future exploration will add to our knowledge, especially in the central and northern portions of the Territory for which there are no published floras.

Water

The Northern Territory Government provides water and sewerage facilities in four of the five major centres—Darwin, Alice Springs, Katherine and Tennant Creek. In the other major centre, Nhulunbuy, the mining company North Australian Bauxite Company provides those services. Facilities are also provided for numerous Aboriginal communities and all smaller gazetted towns such as Pine Creek, Mataranka, Elliott and Finke. Facilities for the new Yulara Tourist Village near Uluru (Ayers Rock) are provided by the Yulara Corporation, and in Jabiru they are provided by the Jabiru Town Development Authority.

Darwin is served by the Darwin River Dam, situated some 70 kilometres from the city. The rockfill dam was completed in 1972. The dam is 30 metres high with a crest length of 564 metres, has an active storage of 230 million cubic metres and a safe draft of 90 megalitres a day. Studies are also being carried out to identify future sources to meet the growing needs of the Darwin region.

Katherine is supplied with treated water from the Katherine River, but with the proposed development of Tindal RAAF base near Katherine, feasibility studies are in progress to assess future supplies from various dam sites on the Katherine River system.

Alice Springs, Tennant Creek and all other towns and communities are supplied by bores from groundwater sources. Alice Springs has twenty production bores at Roe Creek. Tennant Creek has ten at Kelly Well and three at Cabbage Gum.

Soil conservation

The Conservation Commission of the Northern Territory administers soil conservation and control legislation, undertakes resource inventories to assess land capabilities and conducts soil erosion works on behalf of government and private sectors.

Population

The population of the Northern Territory at 30 June 1986, was 154,848 persons. For further information, *see* Chapter 6, Demography.

Aboriginal affairs

Policy

The Government is committed to policies of Aboriginal self-management at all levels. Involvement of Aboriginals in delivery and planning programs, and in all stages of the development and implementation of policy is paramount.

The basis of the Government's approach is to secure access to government services for Aboriginals equal to that accorded other Australian citizens, together with additional services appropriate to Aboriginals' state of disadvantage, and in recognition of a community obligation deriving from Aboriginals' past dispossession and dispersal.

Legal status

As Australian citizens, Aboriginals are entitled to equality before the law. For the purpose of administering various programs designed to benefit Aboriginals, the Department of Aboriginal Affairs and other Commonwealth Government departments and agencies define an 'Aboriginal' or 'Torres Strait Islander' as a person of Aboriginal or Torres Strait Islander descent who identifies as an Aboriginal or Torres Strait Islander and is accepted as such by the community in which he or she lives.

Land and land rights

Aboriginals who are able to prove strong traditional links with unalienated Crown land may make a claim before the Aboriginal Land Commissioner, a judge of the Northern Territory Supreme Court. The *Aboriginal Land Rights (Northern Territory) Act 1976* requires the Land Commissioner, in hearing a claim, to consider a number of matters in addition to traditional ownership before making a recommendation to the Minister for Aboriginal Affairs. The Minister can then accept or reject the Aboriginal Land Commissioner's recommendations.

Minerals on Aboriginal land remain the property of the Crown. The Aboriginal Land Rights Act provides that mineral exploration can only proceed with the consent of the appropriate land council, which in turn must abide by the wishes of the traditional Aboriginal owners of the area concerned. Pre-existing mining interests were exempt from this requirement. In all cases where there is disagreement on terms and conditions, the Minister for Aboriginal Affairs is able to appoint an arbitrator.

Royalties from mining on Aboriginal land are paid into an Aboriginals Benefit Trust Account and are distributed to pay administrative expenses of land councils, to communities affected by mineral developments and, on the recommendation of an advisory committee, to Aboriginal communities of the Northern Territory generally. Control of uranium mining has been reserved by the Commonwealth and special arrangements have been made between the Commonwealth and the Northern Territory Governments in relation to payments in lieu of royalties.

THE AUSTRALIAN CAPITAL TERRITORY

Canberra today. *National Capital Development Commission (NCDC)*

The Canberra district was first seen by white men less than 100 years before it was chosen as the site for the Australian National Capital.

In 1820, Governor Macquarie instructed Charles Throsby, a former naval surgeon interested in exploration, to search for the Murrumbidgee River which had been reported by Aboriginals. Throsby sent Joseph Wild, an experienced bushman and explorer, with a party which included his nephew, Charles Throsby Smith and James Vaughan, to search for the Murrumbidgee. On this journey, the party camped on the plain on which Canberra now stands, and reported favourably on the district on their return. In subsequent years the country was opened up as grazing and farming land.

The building of the national capital was a duty imposed on Parliament by section 125 of the Constitution, which reads *The seat of Government of the Commonwealth shall be determined by the Parliament, and shall be within territory which shall have been granted to or acquired by the Commonwealth, and shall be vested in and belong to the Commonwealth, and shall be in the State of New South Wales, and be distant not less than one hundred miles from Sydney.*

Such territory shall contain an area of not less than one hundred square miles, and such portion thereof as shall consist of Crown lands shall be granted to the Commonwealth without any payment therefor.

The Parliament shall sit at Melbourne until it meet at the seat of Government.

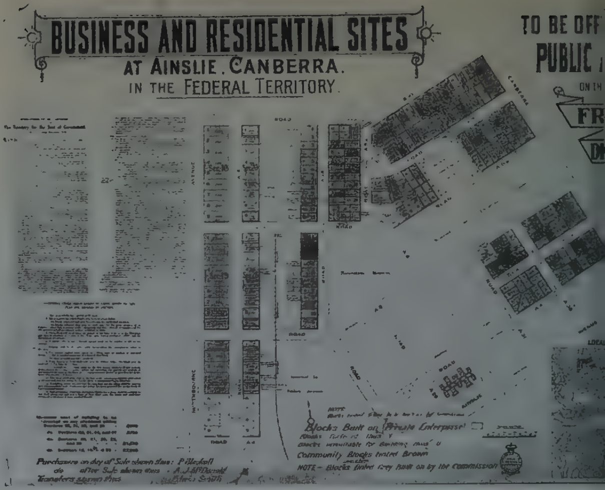
After considering a number of possible sites the Commonwealth Parliament determined, in 1908, that the seat of government should be in the Yass-Canberra district and have access to the sea. The district Surveyor, Mr Charles R. Scrivener, was directed to examine the area and recommend a suitable site. Scrivener nominated 2,630 square kilometres in the watersheds of the Cotter, Queanbeyan and Molonglo Rivers and a further 930 hectares at Jervis Bay. A request for the surrender of the land was made to the New South Wales Government, and, after negotiation, an area of approximately 2,330 square kilometres between the Queanbeyan-Cooma Railway, and the mountain ranges forming the western boundary of the watershed of the Cotter River plus Jervis Bay was selected.

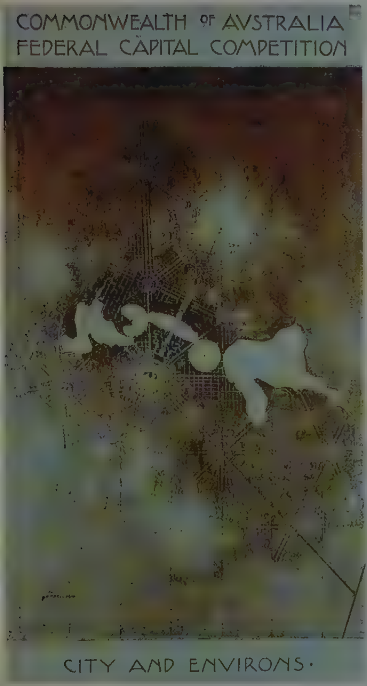
Control of the Territory was assumed by the Commonwealth on 1 January 1911, when the *Seat of Government (Administration) Act* came into force.

Surveyors camp, A.C.T., in the early 1900s. *Promotion Australia*

With the transfer of the Territory from New South Wales, all Crown land passed to the Commonwealth without cost, but privately owned land which the Commonwealth required had to be purchased from the owners.

The decision to vest ownership of all land in the Crown was a very significant social experiment. The intention, which has been maintained, was that the Crown would continue to own the land, but would lease it for specified periods and under given conditions for residential, commercial, industrial and other purposes.





The Burley Griffin plan. *NCDC*

When the Commonwealth took control of the Australian Capital Territory in 1911 the site for the National Capital consisted of undulating grazing country, almost devoid of trees, the consequence of a harsh climate and the pastoral activities of the white settlers. The district population was 1,714 persons.

Seventy seven years later the limestone plains have been transformed into the garden city of Canberra with a population exceeding 250,000 people. It is one of the most outstanding urban landscape achievements seen in Australia and fast becoming one of the world's most beautiful capitals.

In April 1911, an international competition for the design of the new city was launched. From 137 designs received, the first prize was awarded to Walter Burley Griffin, a Chicago architect.

Fundamental principles of the Griffin plan were:

- The geometric pattern of the design;
- The treatment of the flood plain, useless for building purposes, to form a lake to be the unifying feature of the northern and southern parts of Canberra;
- The formation of a grand visual axis from the top of Mount Ainslie to Capital Hill; and
- The separation of national and municipal functions; this was proposed by the locating of all buildings associated with national affairs in an integrated group on the southern side of the lake and locating buildings associated with civic matters in a commanding position on the north side.

The basic Griffin plan has been closely followed in the development of Canberra.

Before the 'lake'. The War Memorial is in the foreground and beyond the flood plain is Parliament House. *NCDC*

Scene at the opening of Parliament House, 9 May 1927. *Promotion Australia*

On 12 March 1913, an official ceremony marked the formal establishment of the Seat of Government. The Foundation Stone was laid on Capital Hill jointly by the Governor-General, Lord Denman, the Prime Minister, Rt. Hon. Andrew Fisher, and the Minister for Home Affairs, the Hon. King O'Malley.

At this ceremony, Lady Denman announced Canberra as the name for the Capital City.

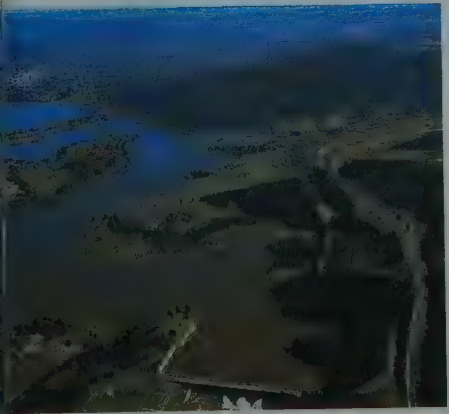
Before World War I brought activities almost to a halt, a power house was erected and a railway branch line from Queanbeyan was completed. Brick works were established, the Cotter Dam to store water for the city was started, and the Royal Military College was established at Duntroon.

Between 1921 and 1923 work on engineering services proceeded and main and subsidiary roads were formed. Residential buildings were started and sites were allocated for hotels and guest houses. The Canberra to Queanbeyan railway was opened for passenger traffic in 1923.

The Commonwealth Parliament continued to meet in Melbourne until 1927 when the new Parliament House in Canberra was opened by His Royal Highness The Duke of York (afterwards His Majesty King George VI) in 1927.

Construction ground almost to a standstill during the economic depression of the early 1930 s, the only major work being the Federal Highway from Canberra to Goulburn.

As the economic situation improved again approval was given for the building of the Australian War Memorial and a building for the National Library, the recommencement of the administration building (on which work had started in 1927), the construction of the Patents Office, and the commencement of a new hospital. The growth in the city's population, though less than expected, necessitated the building of more roads, schools and public utilities. However the outbreak of World War II in 1939 diverted resources to military purposes, and house construction and transfer of government departments to Canberra were postponed.



Lake Burley Griffin today. *NCDC*

Canberra Civic Centre — 1928 above, and today. *Promotion Australia*

By an amendment of the *Seat of Government (Acceptance) Act* in 1938, the Territory was named the Australian Capital Territory.

COMMONWEALTH BANKING CORPORATION
COMMONWEALTH BANK

ACT POPULATION

1911	1,714	1955	33,470
1920	1,972	1960	55,272
1925	3,936	1965	85,500
1930	8,719	1970	131,500
1935	9,760	1975	199,000
1940	14,160	1980	224,300
1945	15,432	1985	250,000
1950	23,579		

Population growth exceeded 50% every 5 years from 1955 to 1975.

Cycleways are popular for recreation and commuting. *NCDC*

The High Commission of Papua New Guinea. Canberra's many diplomatic missions are a major tourist attraction. *NCDC*

After World War II Canberra's development quickened and a scheme to progressively transfer Commonwealth Government departments to Canberra was formulated. With a requirement for permanent administrative buildings, hostel accommodation and suburban growth to cater for the influx, the need for a single authority to coordinate planning, development and construction became evident. Subsequently the National Capital Development Commission (NCDC) was established and assumed control of Canberra's further development on 1 March 1958.

The new Commission endorsed the view that Canberra must have features to distinguish it from other cities, and that these features could emerge from the existence in the heart of Canberra of a large park-like landscape, bounded on the three sides by King's Avenue, Commonwealth Avenue and Constitution Avenue. The Commission also recommended to the Government that the Canberra lake, an essential feature of the original concept, should proceed. These proposals were approved by the Government. As well as being a simple and decorative feature in itself, the lake was also a fundamental requirement for the integrated growth of the approved city, as the recurring flooding of the Molonglo flood plain made it unsuitable for building sites. Major construction work was completed by the end of 1963 and the lake was named Burley Griffin after the man whose plan was responsible for its creation.

Since 1962 the metropolitan growth of Canberra has been catered for in a series of new towns.

Three of these new towns — Woden-Weston Creek, Belconnen and Tuggeranong — are in various stages of development while planning has been undertaken for a fourth new town, Gungahlin. Together with inner Canberra, they will be capable of accommodating about half a million people. Canberra's population is now approaching 260,000.

The new towns are being planned and built with many of the characteristics of independent towns, with their own commercial, employment and retail centres, each having the potential to develop its own individual character. All will be linked by a comprehensive transportation system including roads, cycleways and an intertown public transport system and each will accommodate some of the national capital functions of Canberra.

One of these functions is the provision of office space for government departments and agencies which, with the development of private-enterprise facilities, assists in the decentralisation of employment opportunities to the new town centres.

Homes in the new town of Tuggeranong, with the Brindabella Rang in the background. *NCDC*

In August 1985, the Commonwealth Government announced an intention to amend the Aboriginal Land Rights Act on the basis of a preferred National Land Rights Model which the Government would like to see adopted in all States. This model proposes land claims to unalienated Crown land on the basis of traditional entitlement, historical association, long-term occupation and to meet specific needs. It would confer substantial rights in relation to mining on Aboriginal land but there would be no veto on exploration or mining.

Aboriginal communities are also being assisted to purchase land on the open market. The Aboriginal Development Commission, established in 1980, assists Aboriginal and Torres Strait Islander Communities, groups and individuals to acquire land for a variety of purposes, engage in business enterprises, obtain finance for housing and other personal needs, and to receive training where necessary.

Community services and affairs

Government policy in the administration of Aboriginal affairs is to encourage State and Commonwealth departments and instrumentalities to provide services to Aboriginal Australians as to other Australian citizens and to take measures to ensure that these services are appropriate, accessible and reflect the variety of Aboriginal life styles.

Special programs for Aboriginals

Attention is being given to changing the institutional character of Aboriginal communities in the Northern Territory. Assistance is designed to encourage and strengthen the capacity of Aboriginals to manage their own affairs, to increase their economic independence, and to reduce social handicaps facing them.

Government policy is to provide Aboriginal primary school children in Aboriginal communities with education in their own language as far as practicable. Bilingual education programs initiated in Northern Territory Aboriginal communities in 1973 now operate at 16 schools, using 12 Aboriginal languages. Aboriginal independent community schools, supported by the Government, also operate bilingual education programs.

Land tenure

On 26 October 1987, 154,931 km^2 were held under freehold title; 746,320 km^2 under leasehold; 17,312 km^2 under various licences; 343,552 km^2 were Aboriginal freehold (this figure includes land granted under the *Aboriginal Land Rights (N.T.) Act 1976* and land which has since been claimed and over which title has issued); 824 km^2 set aside for government use; and 83,261 km^2 unalienated. Land rent collected for the year 1986–87 amounted to $469,000.

Following the report of the Aboriginal Land Rights Commissioner in April 1974, the Commonwealth Government introduced the *Aboriginal Land Rights (N.T.) Act 1976*. This Act which commenced on Australia Day, 26 January 1977, gave traditional Aboriginals inalienable freehold title to former Aboriginal reserves and some other land, amounting to approximately 19 per cent of the Northern Territory, and provided a procedure for them to claim title to other areas of unalienated Crown Land.

With the commencement of the *Crown Lands Amendment Act (No. 3) 1980* most existing leases in the Territory were automatically converted to freehold tenure making it the rule rather than the exception. Most Pastoral Leases and all Special Purposes Leases were excluded from automatic freeholding.

Additional amendments to the Crown Lands Act were introduced in 1983 which enable Pastoral Lease holders to apply to have their leases converted to perpetual tenure after certain criteria have been complied with.

The various forms of lease or licence of lands are described below.

Pastoral leases	—granted for periods not exceeding 50 years.
Perpetual pastoral leases	—granted in perpetuity and are only granted after certain criteria have been complied with.
Crown leases (Term)	—granted for a term of years, and in majority of cases can be converted to freehold when developed.
Crown leases (Perpetual)	—granted in perpetuity.

Special purposes leases	—granted for a term of years or in perpetuity for purposes other than pastoral, agricultural or mining, or for private residential purposes within a town.
Grazing licences	—granted to graze stock on Crown Lands for periods not exceeding one year.
Occupational licences	—granted for manufacturing, industrial or any prescribed purposes for periods not exceeding five years.
Miscellaneous licences	—granted for periods not exceeding one year.

Production

Pastoral and agricultural industries

Beef cattle production is the major rural industry in the Northern Territory. The beef industry has been characterised throughout its history by a slow rate of expansion due mainly to the quality of pastures in the top end of the Territory, periodic droughts in the Alice Springs district and remoteness from large domestic markets and other market infrastructure. Although the rate of expansion has been slow it has been persistent. Significant developments in the last two decades include: the establishment of a beef road system; expansion of market outlets, including live animal exports to Malaysia and Brunei; introduction of tropical cattle breeds in the northern regions; continued private investment in water supplies, fences and yards; and development of low cost aerial mustering techniques. Export licenced abattoirs now operate in Alice Springs, Tennant Creek, Katherine, and Point Stuart and Mudginberri on the northern coast. The latter three abattoirs process both cattle and buffalo for export. The gross value of cattle production in 1985–86 was $108 million.

In the Darwin district, the cattle industry has continued to be augmented by the buffalo meat industry. Interest in buffalo control has received a significant boost due to the recent development of a high-priced live export trade with Indonesia. Buffalo surplus to the live export trade requirements continue to be slaughtered predominantly for the West German market. The gross value of the buffalo industry in 1985–86 was in the order of $6 million.

Both the cattle and buffalo industries of the Northern Territory are experiencing dramatic changes in management practices due to a campaign to eradicate brucellosis and tuberculosis from the herds. The campaign requires all stock to be manageable to the extent where a 100 per cent efficient muster can be carried out so controlled stock are segregated and protected from possible infection by non-controlled stock.

In 1980 the Agricultural Development and Marketing Authority (ADMA) was established to develop broadacre cropping industries to the point where export sales were viable. The ADMA has developed six project farms in the Douglas-Daly basin, 250 kilometres from Darwin. These farms provide a commercial environment for the development of the required levels of agronomic and economic efficiency. ADMA operates as the handling and marketing authority for these and other non-project farmers in the Territory. Grain handling depots have been established at Katherine and Douglas-Daly. Gross value of production in 1985–86 was $1.7 million.

NORTHERN TERRITORY: NUMBER, AREA AND LAND UTILISATION OF AGRICULTURAL ESTABLISHMENTS

					Total	
	Number of agricultural establishments	*Area used for crops (a)*	*Area under sown pastures and grasses*	*Balance of area (b)*	*Area*	*Percentage of N.T. land area (134,620,000 hectares)*
				'000 hectares		%
1980–81	350	1.4	87.1	77,500.4	77,588.7	57.7
1981–82	300	2.0	55.6	77,078.0	77,135.6	57.3
1982–83	287	3.4	43.9	75,202.2	75,249.5	55.9
1983–84	283	5.2	32.6	73,648.7	73,686.5	54.7
1984–85	274	5.9	45.3	74,116.8	74,168.0	55.1
1985–86	276	7.1	32.8	72,882.5	72,922.4	54.2

(*a*) Excludes duplication on account of area double cropped. (*b*) Used for grazing, lying idle, fallow, etc.

The horticultural industry in the Northern Territory has experienced very rapid expansion over the last five years. Value of production has increased from just over $200,000 in the early 1980s to in excess of $5 million in 1985–86. Very significant plantings of mangoes are as yet immature. The value of mango production is predicted to be in excess of $10 million by 1990 and will continue to expand thereafter. Commercial trials of cashew production are being undertaken and it is expected that these will be the forerunner for a $5 million industry. The top end of the Northern Territory has a natural advantage for horticultural production due to its capacity to produce the earliest maturing product in Australia for many lines of tropical fruit and vegetables. Table grape production in the Alice Springs district enjoys a similar advantage.

NORTHERN TERRITORY: AGRICULTURAL STATISTICS

	Unit	*1983–84*	*1984–85*	*1985–86*
Livestock numbers—				
Cattle	'000	1,390.1	1,484.0	1,457.5
Domesticated buffaloes	'000	6.5	13.3	12.9
Poultry	'000	221.9	223.9	229.0
Pigs	'000	2.8	3.0	3.1
Gross value of livestock slaughterings—				
Cattle and calves including domesticated buffaloes	$'000	80,141	80,390	111,091
Crops, Area—				
Grain Sorghum (grain and feed)	Hectares	2,227	2,428	3,197
Hay	Hectares	284	55	150
Tree fruit	Hectares	412	459	555
Bananas	Hectares	27	28	23
Vegetables	Hectares	193	306	270
Pastures and grasses (hay, seed, green feed)	Hectares	6,292	7,764	5,337
Total area used for crops (incl. pastures and grasses)	Hectares	11,466	13,678	12,481
Crops, Production—				
Sorghum for grain	Tonnes	5,725	5,068	2,867
Hay	Tonnes	1,150	97	49
Bananas	Tonnes	556	760	650
Pastures and grasses (hay, seed)	Tonnes	5,509	7,895	4,625
Gross value of crops—				
Sorghum for grain	$'000	381	801	487
Fruit	$'000	64	629	1,115
Vegetables	$'000	283	1,512	2,755
Pastures and grasses	$'000	777	1,038	596
Total crops (incl. pastures and grasses)	$'000	2,047	5,210	7,486
Gross value of agriculture	$'000	(*a*) 82,188	(*a*) 85,600	125,217

(*a*) Excludes pigs, poultry, milk and eggs.

Mining

Northern Territory mining establishments have continued to increase from 1983. One of the main factors is the development of gold mining ventures in the Tennant Creek, Hayes Creek, Pine Creek, Tanami Desert and Alice Springs areas.

NORTHERN TERRITORY: MINING ESTABLISHMENTS

		1983–84	*1984–85*	*1985–86*
Establishments operating end of June	No.	17	21	26
Average employment over whole year—persons (*a*)	No.	1,622	1,742	1,903
Wages and salaries	$m	47.4	49.5	57.7
Turnover	$m	542.0	623.7	615.5
Opening stocks at 30 June	$m	150.4	168.4	153.7
Closing stocks at 30 June	$m	171.2	155.8	184.2
Purchases, transfers in and selected expenses	$m	108.3	144.8	165.5
Value added (*b*)	$m	454.3	466.3	480.5
Fixed capital expenditure (*c*)	$m	24.2	61.5	n.a.

(*a*) Includes working proprietors. (*b*) Turnover plus increase (or less decrease) in the value of stocks less purchases, transfers in and selected expenses. Commencing with 1978–79, 'rent, leasing and hiring revenue' and 'rent, leasing and hiring expenses' have been included in the calculation of value added and its components 'turnover' and 'purchases, transfers in and selected expenses'. (*c*) Outlay on fixed tangible assets less disposals.

The principal mining areas are the Alligator Rivers Region for uranium; Gove Peninsula for bauxite/alumina production; Groote Eylandt for manganese; and Tennant Creek for copper and gold.

The Department of Mines and Energy encourages and assists the development of an efficient mining and processing industry throughout the Northern Territory. Through five divisions, the Department administers relevant legislation and provides a wide range of services.

Mines Division acts as a single point of contact for all mineral mining related matters in the Northern Territory. In this context it is also responsible for controlling and ensuring the efficient, orderly and safe exploration for, and recovery and utilisation of, mineral resources in the Northern Territory. The Division formulates and implements policy and legislation designed to investigate the feasibility of mining and development proposals, provides technical advice to prospecting and mining operations, and strives for compatability between mining and alternate land uses. It also administers all mineral titles and is responsible for the collection of mineral royalties.

The Geological Survey Division provides the essential scientific basis for the overall operations of the Department of Mines and Energy. The Division studies the regional geology and geophysics of the Northern Territory and publishes reports of this work for use by industry, other government departments and the public.

Energy Division is responsible for the development and implementation of energy policies, research into alternative sources of energy, planning of energy supply and consumption in the Northern Territory and for safety and environmental supervision of petroleum exploration. This includes promotion of the exploration for and development of indigenous energy resources, research into diversification of the Northern Territory's energy base, energy conservation and security.

Alligator Rivers Region is responsible for the oversight and co-ordination of all stages of uranium mining, milling and rehabilitation processes in the area. The unit is the focal point for the industry and the public for matters concerning uranium mines in the Northern Territory.

Offshore petroleum resources

The development of offshore petroleum resources is set to change the entire progress and development of the Northern Territory.

BHP Petroleum, which is putting 50 per cent of its Australian exploration effort into the search for oil in the Timor Sea, recently doubled production from the Jabiru venture with the addition of another subsea well and by modifying facilities. Production is now about 29,000 barrels per day.

In August 1987, the Minister for Mines and Energy, authorised the release of four new exploration areas in the Bonaparte Gulf and the Arafura Sea, and the interest shown by the petroleum industry is an optimistic indicator of the promise of these regions.

The Timor Sea is Australia's most promising offshore area, and the increasing activity is heralding a substantial growth in production over the next couple of years. Expenditure on exploration and production in 1986 reached a record $120 million, treble the amount spent in the previous year. Geophysical activity, which usually precedes drilling, also established record figures in 1986. More than 11,000 kilometres of seismic survey line was run, double the previous year's figures.

Forestry

Forestry activities in the Northern Territory commenced in 1959 under the Forestry and Timber Bureau; later a State-type service was developed under the Department of the Northern Territory.

In July 1978, with the granting of self-government, forestry became the responsibility of the Territory Parks and Wildlife Commission, now the Conservation Commission of the Northern Territory.

Present activities fall into four main areas: Urban Forestry, Plantation Forestry, Native Forest Management and Conservation.

The Urban Forestry section is aimed at improving the urban environment throughout the

Northern Territory through programs of park and street beautification and arid area species testing.

The Plantation Forestry section is predominantly based on plantation establishment on more favourable sites on Melville Island and is ultimately aimed at import replacement. The major species in use is *Pinus caribaea*, though early plantings were largely cypress pine. A small pressure treatment plant providing treated round timber is operated by the Aboriginals on nearby Bathurst Island.

Management of native forest is currently confined to the Murganella area of Arnhem Land where a policy of protection from fire has resulted in extensive regeneration of cypress pine and native hardwoods, *Eucalyptus tetrodonta* and *E. nesophila*. Current research in this area is aimed at development of sound management prescriptions for treatment of this regeneration.

In its conservation role, the Conservation Commission has given emphasis to fire and ecological studies throughout the Territory together with seed collection, testing and propagation, and gene pool conservation of rare or unique species.

Fishing

Seafoods landed in the Northern Territory in 1985–86 totalled 5,998 tonnes and had an estimated value of $29.38m. Prawn fishing continues to dominate the industry with 3,302 tonnes being landed, worth an estimated $24.66m. Barramundi remains the second most important species fished. Landings stood at 609 tonnes and were valued at $1.75m. In order of estimated landed value, mackerel, mud crabs, threadfin salmon, snapper, shark, bay lobster, bream, scallops and squid are the next most important species taken.

Management control measures have been introduced in the prawn, barramundi and mud crab fisheries in order to prevent over-exploitation of these fisheries resources.

Under an agreement to 31 July 1987, 50 pairs of Taiwanese trawlers were permitted to catch up to 15,000 tonnes of fish from areas off the north and north-west coasts of Australia. The western boundary of the authorised area (116° E longitude) was moved eastward to 117°30′ E longitude after 31 July 1987, an adjustment which was considered necessary to ensure that development of an Australian Fishery would not be inhibited.

NORTHERN TERRITORY: PRINCIPAL FISHERIES

		1980–81	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*
Prawns—							
Estimated gross weight of prawn catch . . .	tonnes	4,259	2,986	2,402	2,462	2,154	3,302
Gross value of prawns	$'000	17,067	15,250	15,692	17,587	13,837	24,661
Fish—							
Estimated live weight of fish catch	tonnes	1,634	1,897	1,694	1,564	1,784	2,523
Gross value of fish	$'000	2,267	2,944	3,232	2,584	2,800	3,973

Secondary industries

The types of secondary industries that have developed in the Northern Territory have been largely based on demand from the local markets, some processing of primary production for exports, including the processing of mined ores and beef, together with exports in the mining and construction industries.

The isolation of the Northern Territory from the major population areas of Australia and resultant high transportation costs make other than local market expansion difficult.

While industry is limited to local markets, industrial expansion will be small. However determined efforts are being made to take advantage of the proximity of Darwin to the rapidly expanding South East Asian markets. It is envisaged that in the longer term secondary industry will be largely export based.

The following table shows results of the Manufacturing Censuses taken in respect of the years 1982–83 to 1984–85.

NORTHERN TERRITORY: MANUFACTURING ESTABLISHMENTS

	Unit	*1982–83*	*1983–84*	*1984–85*
Establishments at 30 June	No.	117	115	137
Persons employed (*a*)	No.	2,434	2,432	2,645
Wages and salaries	$m	45.2	49.3	58.3
Turnover	$m	343.9	358.7	407.4
Opening stocks at 30 June	$m	82.9	76.5	77.4
Closing stocks at 30 June	$m	81.3	76.6	77.7
Purchases, transfers in and selected expenses	$m	251.3	248.6	278.9
Value added	$m	91.0	110.2	128.8

(*a*) Average over whole year. Includes working proprietors.

Tourism, parks and reserves

Tourism is second only to mining as the Territory's most important industry with direct earnings for 1985–86 estimated at $300 million.

In 1981–82, 411,000 people travelled to the Territory, increasing to approximately 710,000 in 1986–87, representing an average visitor growth rate of 12 per cent. This growth rate continues to encourage investment in tourism facilities and, since the early 1980s, well over $600 million has been invested in tourism-related facilities in the Territory.

Major developments include the Darwin and Alice Springs Casinos, the Yulara Resort, Sheraton Hotels in Alice Springs and Darwin, and the Beaufort Hotel and Convention Complex in Darwin. Major development plans include wilderness attractions and facilities at Kings Canyon, Litchfield Park and Cobourg Peninsula.

The Northern Territory Tourist Commission has had responsibility for the promotion of tourism since it was formed in 1980. It has its head office in Alice Springs, a regional office in Darwin and bureaux in all States with two each in New South Wales and Victoria, plus overseas regional offices in London, Los Angeles, Tokyo, Frankfurt, Singapore and New Zealand.

In 1986, and again in 1987, the Commission won the Australian tourist industry's most prestigious accolade, the National Award for the Best Australian Tourism Authority/ Commission.

The Tourist Commission's budget for the 1987–88 financial year is $13 million.

There are 52 parks and reserves, covering about 5,800 square kilometres, under the care, control and management of the Conservation Commission of the Northern Territory. The Commission's functions include the preservation and protection of natural and historical features and the encouragement of public use and enjoyment of land set aside under its control.

In addition, the Gurig National Park (2,207 square kilometres) is managed by Cobourg Peninsula Sanctuary Board, and the Kakadu National Park (15,923 square kilometres) is managed by the Australian National Parks and Wildlife Service. Uluru National Park (Ayers Rock–Mt Olga) is managed by the Australian National Parks and Wildlife Service in conjuction with the park's traditional Aboriginal owners. Visitors to Uluru National Park have increased from an estimated 86,900 in 1981 to approximately 220,000 in 1987 while at Kakadu numbers have increased from 31,500 to an expected 195,000 in the same period.

Railways and roads

Railways

Passenger and freight train services commenced in December 1980 over the then new 831 km standard gauge Tarcoola–Alice Springs railway. Direct services from Sydney to Alice Springs commenced in 1984.

Roads

The Stuart Highway is the principal north-south axis route for the Northern Territory connecting Alice Springs, Katherine, Tennant Creek and Darwin to Adelaide. The section Darwin–Alice Springs is 1,486 kilometres long and sealed over its full length. The section south of Alice Springs is sealed to the South Australian border, a distance of 292 kilometres.

The Barkly Highway is the principal route to and from Queensland via Mount Isa. It is 636 kilometres long, 432 kilometres of this being within the Territory, and is sealed. Running approximately east-west, it connects to the Stuart Highway some 26 kilometres north of Tennant Creek.

The Victoria Highway, the principal access route to and from Western Australia via Kununurra, is 468 kilometres from Katherine to the Northern Territory border and is sealed.

These highways are used to carry a variety of freight, including cattle, particularly between the railheads at Mount Isa and Alice Springs. They provide access to meatworks at Wyndham (Western Australia), Cloncurry (Queensland) and Katherine. In addition, they play a particularly important part in the Northern Territory economy through their association with the tourist industry.

The program for upgrading the Stuart and Barkly Highways was commenced in the early 1970s and the ongoing program is continuing to bring these roads to National Highway Standards. A strategy to upgrade the Victoria Highway is being developed.

Education

Responsibility for education in the Northern Territory was transferred from the Commonwealth Department of Education to the Northern Territory Government on 1 July 1979.

Details of the responsibilities are outlined in the *Northern Territory of Australia Education Act 1979*. Under the Act, the Minister for Education is responsible for the general administration and control of education services. The Act states that the Minister may take all measures which, in his opinion, are necessary or desirable to: assist parents in the Territory in fulfilling the responsibility to educate their children according to the individual needs and abilities of those children; make education services, provided by the Minister, available to all people in the Territory; and, assist all people of the Territory with their own education. The Act also provides for the establishment of advisory councils.

Schools in the Northern Territory

There are some 160 schools in the Northern Territory with a total student population of approximately 35,000. About one-third of students are of Aboriginal descent. In addition to primary and pre-schools, there are 11 government high schools, one secondary correspondence school and three private high schools. There are three area schools offering secondary courses and two residential colleges for Aboriginal students. There are also 16 government schools in Aboriginal communities that offer post-primary courses and six mission schools with post-primary programs.

Teaching staff are provided by the Northern Territory Teaching Service and qualified applicants are recruited from all parts of Australia.

With the exception of Year 12 level, where most students are assessed by the Senior Secondary Assessment Board of South Australia, all aspects of curriculum, course accreditation and student assessment are the responsibility of the Northern Territory Board of Studies, with subject area committees in English, Languages other than English, Mathematics, Science, Computer Education, Social and Cultural Education, the Arts, Health and Physical Education and Life/Work Skills. Apart from Life/Work Skills, which is concerned with secondary education only, all committees span primary and secondary education from Transition to Year 12.

Subject area committees define the core of essential skills and understanding in which all students should gain competence and the educational experiences which they should have during their primary and junior secondary schooling. They also identify or develop the recommended curricula, which consists of those courses and materials which are regarded as the best available to assist schools in achieving the objectives specified in the core, as well as skills, understanding, content and experiences considered appropriate for extension beyond the core.

In addition to curriculum development, subject area committees provide for guidelines on the assessment of student performance, examples of assessment instruments and, in some subjects, moderation of student assessment. The Junior and Senior Secondary Studies Certificates are issued by the Northern Territory Board of Studies at Year 10 and Senior levels respectively.

The work of subject area committees is co-ordinated and supplemented by curriculum officers at central and regional levels and by a range of educational services.

The two Schools of the Air in the Northern Territory, one at Katherine and one at Alice Springs, have developed individual programs and provide correspondence and radio lessons for students in the Years One to Seven. One correspondence school caters for isolated secondary students. Aerial and road patrols are carried out regularly to provide teacher–student and parent contact.

Special schools are located in Alice Springs and Darwin for handicapped children. However, where appropriate, students with special needs are integrated into primary and secondary schools. Guidance and Special Education Advisory Services operate from the two regional offices in Alice Springs and Darwin.

A program of exchange between Indonesia and the Northern Territory is continuing in which up to two teachers from each country are exchanged for a school year, and four senior students spend up to six months in each country. In addition, the Northern Territory Department of Education encourages school-organised excursions to Bali and other South East Asian localities.

Aboriginal education

Most Northern Territory Aboriginals live away from town centres and their education is provided in various settings including mission schools, government schools on or near settlements or Aboriginal townships, on pastoral properties and outstations or homeland centres.

There has been an increasing number of requests from outstations for the Department of Education to provide assistance with Aboriginal education. A small group of teachers is currently working in this field and developing special methods and modified courses to help overcome the difficulties faced by isolated outstation groups in their quest for education.

Government schools for Aboriginal children in out-of-town centres provide tuition at pre-school and primary school level with a number of them providing post primary (secondary age) classes as well.

For Aboriginal children who wish to proceed to secondary schools there are now two residential colleges: Yirara and Kormilda. These colleges are regionally based but situated near urban centres, Yirara at Alice Springs and Kormilda in Darwin. They provide secondary age students from outlying centres with the opportunity to undertake a range of courses at an urban high school.

Bilingual education programs in Northern Territory schools in Aboriginal communities have attracted wide interest from within Australia and overseas. There are 16 schools offering bilingual programs to approximately 3,500 students. Many other schools include Aboriginal language and culture in the curriculum. Fourteen languages are now being used in the program and 6 further languages are under consideration. Many school children are acquiring initial literacy skills in their own language. Half of the curriculum is devoted to instruction in an Aboriginal language, and during the other half a structured English course forms an integral part of the bilingual program. Other aspects of Aboriginal education are covered in the TAFE section.

Technical and Further Education—TAFE

Technical and further education services in the Northern Territory are provided by the Darwin Institute of Technology and the Department of Education through its Institute of Technology and Further Education Division.

The Department has a number of TAFE Colleges and services the TAFE Advisory Council which advises the Minister for Education on Territory-wide TAFE policy issues. The Council membership includes representatives of employer and employee organisations and Northern Territory TAFE colleges.

The TAFE Colleges in the Northern Territory are outlined below.

Darwin Institute of Technology

The Institute was opened in 1974 as the Darwin Community College and was redesignated the Darwin Institute of Technology in 1985. It is an autonomous multi-level institution offering over 100 award programs in both advanced education and technical and further education, and a wide range of non-award recreational and continuing education programs.

The campus covers 58 hectares at Casuarina in Darwin's northern suburbs, 13 kilometres from the city centre, and the School of Australian Linguistics is located at Batchelor.

Advanced education programs are offered at degree, post-graduate diploma and associate diploma level. Technical and further education programs are offered at certificate, trade certificate, post-trade certificate and apprenticeship trade course level.

The Institute also provides examination facilities and some tutorial assistance to external students in the Northern Territory studying at other Australian Institutions, through the External Studies Centre at the Casuarina campus. International programs are offered through the School of Extension Services. In 1987, 1,469 nett students were enrolled in advanced education programs, approximately 4,220 nett in TAFE award courses and approximately 3,600 nett students in non-award courses.

Alice Springs College of TAFE

Formerly the Community College of Central Australia, the Alice Springs College of TAFE is a multi-sector, multi-campus institution which provides recreational, remedial, pre-trade, trade and para-professional studies. It has three campuses and has expanded rapidly in recent years in response to increasing demands.

Katherine Rural College

The Katherine Rural College was established to train people for employment in the Northern Territory rural industry. It offers a two-year, full-time residential course, leading to a Certificate in Rural Studies, intensive three-month long courses in basic stock-handling and station skills and short courses in areas such as horse-handling, horse-shoeing, explosives, welding, farm mechanics, pregnancy diagnosis and artificial insemination of cattle.

The College has a 3,440 hectare property north of Katherine and a 1,000 square kilometre property at Mataranka, south of Katherine.

Batchelor College

Batchelor College is a residential institution providing programs for Aboriginal people which lead in particular to teaching qualifications at advanced education and TAFE levels. The College also offers courses for Aboriginal adult educators and conducts courses related to community management. The College is situated in the town of Batchelor.

N.T. Open College

The Northern Territory Open College is a distance education institution which opened in January 1987 and offers services through a network of education centres and through lecturers based in many communities.

Finance

The following table gives details of government revenue and outlays that have been identified as relating specifically to the performance of local or State-type functions in the Northern Territory from 1983–84 to 1985–86. Receipts collected in the Northern Territory from Australia-wide sources (e.g. income taxes, customs duties, etc.) and outlays in the Northern Territory on items of a national character (e.g. defence, civil aviation and cash benefits paid to Northern Territory residents as part of national programs) are *not* included.

NORTHERN TERRITORY: OUTLAY AND REVENUE

($ million)

	1983–84	*1984–85*	*1985–86*
OUTLAY			
Final consumption expenditure—			
Public order and safety	59.9	62.3	70.8
Education	122.5	144.1	161.6
Health	83.8	100.5	113.1
Social security and welfare	9.5	12.3	8.0
Other	265.5	293.8	312.7
Expenditure on new fixed assets—			
Education	15.8	21.9	27.1
Road transport	46.0	52.8	48.2
Housing and community development	58.1	68.1	70.7

NORTHERN TERRITORY: OUTLAY AND REVENUE—*continued*

($ million)

	1983–84	*1984–85*	*1985–86*
OUTLAY			
Health	2.7	4.5	6.9
Social security and welfare	1.7	2.9	4.9
Electricity and other energy	31.3	36.9	99.4
Other	71.8	59.9	62.6
Expenditure on secondhand fixed assets (net)	−31.5	−30.4	−12.6
Expenditure on land and intangible assets (net)	4.0	−6.1	−20.3
Increase in stocks	2.1	1.6	−3.0
Interest paid	63.3	74.1	87.6
Personal benefit payments	1.2	1.4	1.7
Subsidies	64.6	74.9	63.2
Net advances to the private sector	56.1	46.5	50.8
Grants to non-profit institutions—current	42.0	52.7	63.8
Grants to private sector and public financial enterprises—Capital	0.5	0.5	0.7
Total Outlays	**970.9**	**1,075.3**	**1,217.7**
REVENUE			
Taxes, fees and fines	61.9	76.4	100.1
Property income	39.7	49.0	62.3
Net operating surpluses of public trading enterprises	20.5	27.1	−1.0
Other revenue	3.6	3.5	11.4
Commonwealth Government grants	740.6	829.0	836.0
Commonwealth Government advances	88.9	84.1	102.5
Net borrowing	74.4	75.0	65.3
Other financing	−58.7	−68.8	41.1
Total Receipts	**970.9**	**1,075.3**	**1,217.7**

In addition to transactions relating to the Northern Territory in the Consolidated Revenue Fund and certain trust funds, the transactions of the following public corporations are included: Northern Territory Port Authority, Northern Territory Housing Commission, Northern Territory Electricity Commission, Corporation of the City of Darwin, Corporation of the municipalities of Alice Springs, Jabiru, Katherine, Litchfield, Palmerston and Tennant Creek.

THE AUSTRALIAN CAPITAL TERRITORY

General description

The Constitution provides that the Seat of Government of the Commonwealth of Australia shall be in the State of New South Wales but distant not less than 160 kilometres from Sydney. After a number of alternative sites were considered, an area of 2,359 square kilometres, lying approximately 320 kilometres south-west of Sydney, was transferred to the Commonwealth as from 1 January 1911. A further 73 square kilometres at Jervis Bay were transferred as from 4 September 1915 to serve as a port for the Territory.

The primary responsibility for administering the Australian Capital Territory lies with the Australian Capital Territory Administration, within the Department of the Arts, Sport, the Environment, Tourism and Territories. The A.C.T. Administration's responsibilities cover most functions carried out by State and municipal governments, including the leasing and management of land, housing, public transport, forestry, municipal and community services, general works, commercial regulation, industrial relations, employment and vocational training, legislative drafting, education and public health. Responsibility for policing and the courts lies with the Attorney-General's Department. Within the A.C.T. Administration, the National Capital Development Commission has the responsibility for the planning and development of Canberra.

The Australian Capital Territory has no formal system of local government.

As at 30 June 1986 the population of the Australian Capital Territory was 249,407.

Housing

In May 1987, the Government formally approved the alignment of A.C.T. public housing operations with the Commonwealth-State Housing Agreement (CSHA) from 1 July 1987. As a result of this decision, Commonwealth funding assistance for public housing in the A.C.T. will be provided on a similar basis to that provided to the States under the CSHA.

The role of the A.C.T. Administration in the area of housing has changed significantly since 1930 when, as the Department of the Interior, it offered rental accommodation to public servants in Canberra. The proportion of houses and flats in the Australian Capital Territory occupied by tenants of the Administration has fallen steadily from 79.7 per cent of total occupied houses and flats in 1954 to 58.3 per cent in 1961, 28.1 per cent in 1971, 13.0 per cent in 1984, and 12.9 per cent in 1985. This proportion remained the same in 1986, and rose slightly to 13.0 per cent in 1987.

Although there has been a considerable increase in the proportion of home ownership in the Australian Capital Territory since 1954, the demand for public housing has continued to increase. At June 1981 there were 2,126 persons on the waiting list for public housing. There were 1,554 in 1982; 1,757 in 1983; 2,141 in 1984; 2,756 in 1985; 1,781 in 1986, and 2,080 in 1987. Housing resources have not been able to keep pace with the demand; therefore rental accommodation and housing finance are now allocated on a means tested basis.

The Administration, in conjunction with the National Capital Development Commission, has endeavoured to expand public housing stock through annual building programs. The 1986–87 building program provided for the commencement of 525 dwellings and it is expected that 300 dwellings will be commenced during 1987–88.

Both private and public home building activity have continued to expand the stock of residential dwellings in the Australian Capital Territory. At June 1987 there were 22,908 occupied dwellings in the Central Canberra area; 20,176 in the Woden Valley and Weston Creek area; 26,872 in the Belconnen area; 16,395 in the Tuggeranong area; and 115 elsewhere in the Australian Capital Territory. The total number of occupied dwellings in the Australian Capital Territory at June 1987 was 86,466.

For further information *see* Chapter 20, Housing and Construction.

Parks and conservation

Since its establishment, Canberra has been developed as a garden city. The A.C.T. Parks and Conservation Service manages the urban open space in the Territory, including national parks, reserves, parkland, sportsgrounds, public surrounds, rural picnic grounds and other landscaped public areas. The total urban area managed during 1986–87 increased by approximately 320 hectares to a total of 9,200 hectares.

The Yarralumla Nursery, established in 1913, propagates trees and shrubs for use in development projects, as replacements in landscape maintenance and for issue to buyers of new home sites. In 1986–87, 481,270 trees and shrubs and 34,444 annual plants were produced.

The Horticultural Services Unit provides horticultural advice and tests turf grasses, trees, shrubs and new products and techniques for application in the Canberra environment.

Namadgi National Park

In June 1984 the former Gudgenby Nature Reserve (62,000 hectares) and part of the Cotter River Catchment (32,000 hectares) were combined to form a new national park. It is known as Namadgi and covers 40 per cent of the Australian Capital Territory. Namadgi shares a common boundary with the magnificent Kosciusko National Park (520,000 hectares) and other reserves in neighbouring New South Wales.

The topography and landscapes of Namadgi National Park and, consequently, the plant and animal communities, are extremely varied and include the only parts of the Territory with a sub-alpine climate. Habitat ranges from grassland of the valley floors, through woodland and mountain forest to sphagnum bogs, heath swamps and alpine woodland. Several high peaks rise to over 1,800 metres above sea level and include Mount Bimberi, the highest peak in the Australian Capital Territory.

Tidbinbilla Nature Reserve

The Tidbinbilla Nature Reserve (5,515 hectares) is located 43 kilometres south-west of Canberra. The Reserve includes much of the Tidbinbilla Valley, which ranges from 762 metres above sea level to 1,561 metres at Tidbinbilla Peak, the highest of the Tidbinbilla Range which forms the western boundary of the Reserve. As a consequence of the valley topography, many habitats are represented and plant and animal wildlife is diverse. A system of wildlife enclosures and waterfowl ponds, 30 kilometres of nature trails and a comprehensive information service are provided for approximately 120,000 visitors a year.

Black Mountain Reserve

The Black Mountain Reserve (521 hectares), adjacent to Lake Burley Griffin, is a significant focal point in the Canberra landscape and an essential component of the 'mountain and lake' concept of the Canberra scene. Black Mountain Reserve is unique in its setting within the inner boundary of a national capital. In addition to broad scale scenic attributes, the Reserve has a varied complex of flora and fauna and is used extensively for recreation and nature study. Black Mountain Reserve is part of a number of urban reserves which make up Canberra nature parks.

Jervis Bay Nature Reserve

The Jervis Bay Nature Reserve occupies two-thirds (4,520 hectares) of the Commonwealth Territory of Jervis Bay which lies on the south-east coast of Australia. The Reserve is characterised by a substantially natural landscape and outstanding coastal scenery, high cliffs, ocean and bay beaches, sand dunes, woodland, forest and heath. Bowen Island is now gazetted as part of the Reserve. Parts of the unspoilt marine environment of Jervis Bay and its foreshores are managed in sympathy with the Nature Reserve. Camping facilities are provided and are designed to complement the natural values of the area which attracts over 500,000 visitors annually.

Management aims for all nature reserves in the Australian Capital Territory and Territory of Jervis Bay are to:

- maintain natural ecosystems and landscapes and protect sites of prehistoric and historic significance;
- provide opportunities for recreational, scientific and educational use of these resources consistent with their protection.

Wildlife

Extensive surveys and investigations of the vertebrate fauna of the Australian Capital Territory are continuing, and active management of some species is necessary. For example, collaborative research by A.C.T. Parks and Conservation service staff and scientists from CSIRO have developed techniques for the control of feral pigs in Namadgi National Park. Macquarie perch is a rare and endangered fish species which was once common in south-eastern Australia. Small populations occur in streams in the Territory, and these are being regularly monitored. Stocks of native fish species are maintained in Canberra's lakes, with regular stocking of silver perch, golden perch and murray cod.

Soil conservation

Rivers and lakes of the Australian Capital Territory are protected from serious siltation by a program of works in the Territory and adjoining areas of New South Wales, and by controls on methods of land development and use.

Lake Burley Griffin is protected under a collaborative works project between the Commonwealth, the State of New South Wales, and landholders in the lake's catchment. The scheme, commenced in 1966, is designed to remedy soil erosion problems and to promote sound land management practices. The A.C.T. Administration and the CSIRO are studying the lake sediments to help determine the main sources of sediment, and so to decide works priorities in the catchment.

Land tenure

Reference has been made in earlier issues of the *Year Book* to the general conditions of land tenure in the Australian Capital Territory and to the area of alienated and leased land.

With minor exceptions, the freehold estate of land in the Australian Capital Territory has been acquired by, and is vested in the Crown. The *Seat of Government (Administration) Act 1910* prevents the sale or disposal of such Crown land for any estate in freehold, except in the case of a contract that preceded the Act. Progressively the remaining areas of freehold land are being acquired.

Leases of land for residential, commercial and other purposes in the city area are usually granted under the *City Area Leases Ordinance 1936*. Some special leases for other purposes (such as diplomatic sites or churches) are granted under the *Leases (Special Purposes) Ordinance 1925* or the *Church Lands Leases Ordinance 1924* or the *Leases Ordinance 1918* if for a short term or experimental land use. Some areas outside the city area not immediately required for the development of the city or for other public purposes or where there is no intention of development, are leased for agriculture or grazing under the *Leases Ordinance 1918*.

The Commonwealth Territory at Jervis Bay, comprising about 7,360 hectares, was acquired from New South Wales for the possible provision of port facilities in connection with the Australian Capital Territory. A portion of the area is occupied by the Royal Australian Naval College (*H.M.A.S. Creswell*) and a Royal Australian Navy airfield. Several blocks fronting Sussex Inlet plus an area on Bowen Island have been leased for guest houses and holiday camps, etc., under the *Leases Ordinance 1918*, and an area of land in the Murray's Beach area has been set aside for possible use as an atomic power station under the control of the Australian Nuclear Science and Technology Organisation (ANSTO). An Aboriginal community is located at Wreck Bay. On 14 March 1987, the Federal Minister for Aboriginal Affairs transferred ownership in perpetuity of 403 hectares of land at the Wreck Bay township to the local Aboriginal community.

Production

Forestry

Forestry field operations in the Australian Capital Territory began in 1915 with the planting of pines on the denuded slopes of Mount Stromlo to arrest soil erosion and to improve the visual quality of the landscape. In 1926, a program for development of commercial forests was approved following a comprehensive review of the Territory's potential for forest development. Major reviews of this program were made in 1932, 1954, 1967 and 1984; always, however, retaining the basic policy of systematic conservation and development. Forestry operations, including fire protection treatment, extend to some 13,000 hectares of natural forest in the Cotter catchment and adjacent areas and the Kowen region. The more productive stands in these areas were harvested extensively to provide timber for Canberra's post-war expansion and were subsequently treated to promote regeneration and protect the quality of water harvested.

Forest management in the Australian Capital Territory has been formulated to cater not only for commercial timber production but also to provide recreation facilities, an attractive visual environment for the national capital, to protect the water supply catchment and for appropriate wildlife conservation.

The forest authority is charged with the managment of some 37,100 hectares of land in the Australian Capital Territory. As at 30 June 1987, the total area of coniferous plantations in the Australian Capital Territory and Jervis Bay was 15,775 hectares nett. Of 220 hectares at Jervis Bay, the majority consisted of *Pinus radiata* (Monterey Pine) and *Pinus elliotti* (Slash Pine). The plantations in the Australian Capital Territory consisted mainly of *Pinus radiata* and *Pinus ponderosa* (Yellow Pine). Total area of *Pinus radiata* was 14,900 hectares.

In 1986–87 there was no commercial production of hardwood timber from the Australian Capital Territory or Jervis Bay. The volume of softwood cut was 173,000 cubic metres. The total value of this unprocessed timber unloaded at the mill (mill door value) was $7.7 million.

Agriculture

Since 1974–75 the number of agricultural establishments in the Australian Capital Territory has fallen. In 1986 there were 140 rural lessees. In 1986–87 small amounts of wheat and oats for grain and fodder were grown. Livestock numbers at 31 December 1986 included 13,181 cattle, 119,393 sheep and over 1,000 horses.

Commercial operations

Consumer affairs

The Consumer Affairs Bureau receives and investigates complaints from consumers concerning unfair commercial practices, including credit transactions. It conducts research into matters affecting consumer interests and provides information of benefit to consumers. The Bureau also provides advice to both landlords and tenants in relation to residential tenancies, and acts as a watchdog on product safety matters.

The Trading Standards Office

Formerly the Weights and Measures Office, the Office maintains the standards of mass, length and volume for the Australian Capital Territory. It periodically examines all scales and measures used for trade and checks the weight or measures of packaged goods sold in retail premises. The Office also receives and investigates consumer complaints in relation to weights and measures problems.

Licensing

In the Australian Capital Territory, licensing schemes are established as a means of regulation, consumer protection, and of setting minimum standards of qualifications and experience for entry into certain occupations. Commercial activities such as credit provision, finance broking, bookmaking (racing industry), sale of motor vehicles, sale of real estate and stock station and business agencies are controlled by legislation requiring licensing or registration.

Gaming and liquor

The Gaming and Liquor Authority was established to control outlets engaged in the supply of liquor and to control gaming machines in the Australian Capital Territory.

A.C.T. Credit Tribunal

The A.C.T. Credit Tribunal is an independent Tribunal established by the *Credit Ordinance 1985* to adjudicate between credit users and credit providers in matters arising under the Ordinance. It also decides as to the grant of licences to credit providers and finance brokers to engage in those businesses.

Co-operative societies

The Co-operative Societies Ordinance 1939 provides for the incorporation of building societies, trading, housing and service societies and credit unions. The Registrar is responsible for the incorporation of new societies, registration of documents, inspections, and inquiries into the working and financial situation of societies and the hearing and determination of certain disputes between a society and a member.

Workers' compensation

A workers' compensation scheme was established by the *Workers' Compensation Ordinance 1951*. Under this scheme, the nominal insurer is liable to pay workers' compensation if a worker is not insured or if an employer defaults in compensation payment.

Registrar's Office

The Registar's Office controls both Land Titles and Births Deaths and Marriages Offices. The Land Titles Office is responsbile for registration of Land Titles dealings, Miscellaneous Deeds (e.g. Powers of Attorney) and Instruments (e.g. Bills of Sale) whilst the Births Deaths and Marriages Office registers all Australian Capital Territory births, deaths and marriages.

Public Trustee

The Office of the Public Trustee is a corporation established by the *Public Trustee Ordinance 1985*. Its main responsibilities are connected to the role of trustee, administrator, executor, attorney, agent and manager of property in relation to wills or settlements, under the Ordinance.

Transport and communication

The A.C.T. Central Administration Office is responsible for the regulation of tranport and traffic under an A.C.T. Ordinance. ACTION, the Australian Capital Territory Internal Omnibus Network, is also operated by the A.C.T. Central Administration Office. It operated 398 buses in 1986–87 over 118 routes covering 1,524 kilometres. A total of 16,192,400 kilometres was travelled and 24,151,800 passenger journeys made.

There are eight radio broadcasting stations currently in the Territory: 2CY, 2CN and ABC-FM of the national broadcasting system; two commercial stations, 2CA, and 2CC; and three public stations, 2XX, 1PPP and 2SSS-FM. There are three television stations, ABC Channel 3 of the national broadcasting system; Channel 0-28 of the Special Broadcasting Service and Australian Capital Television Pty Ltd (Capital 7), a Canberra based commercial station.

Social

See also Chapter 9, Health; Chapter 10, Education; and Chapter 11, Law and Order.

Schools

The *Education Ordinance 1937* provides for the compulsory attendance at school of children between the ages of six and fifteen years. Government schools are administered by the A.C.T. Schools Authority, which became a statutory body under the *Schools Authority Ordinance 1976* in January 1977. The Authority Council and school boards are representative of teachers, parents and the community. The A.C.T. Schools Accrediting Agency within the Authority system accredits courses and administers student assessment procedures for Years 11 and 12.

In July 1987 there were seventeen government high schools in the Australian Capital Territory and eight secondary colleges. High schools cater for Years 7 to 10 and secondary colleges for Years 11 and 12. In addition, there is a Year 9 to 12 school and a kindergarten to Year 10 school. Secondary students enrolled totalled 17,930.

Sixty-seven government schools provide courses at primary level, two of these being in rural districts and one at Jervis Bay. There is also an early childhood education school. The number of students enrolled in government primary schools at July 1987 was 22,149.

Educational guidance services are provided by the Educational Guidance Centre and by school counsellors allocated to each school.

There are four government special schools in the Australian Capital Territory with a total enrolment of 372 students in July 1987. These schools cater for pre-school, primary and secondary school aged students who are physically or mentally handicapped. An annex for physically disabled students operates on a mainstream primary campus.

Mildly intellectually handicapped children are served by learning centres attached to ten primary schools and seven high schools. Special units for deaf children are available at three schools. Blind children also receive specialised support. Children below school age with learning, sight or hearing problems receive assistance from specially-trained staff at pre-schools, at the Therapy Centre and in their homes. Eleven primary schools cater for children of junior primary age who are unable to adjust to a normal class situation. Two schools cater for children with language and communication disorders.

Special English classes for children of non-English speaking background are available at fifty-nine primary schools, eighteen high schools and eight secondary colleges. Three Introductory English Centres (two for primary, one for secondary aged students) cater for migrant or refugee children with little or no English. They attend for up to six months and then return to their neighbourhood school.

The seventy-five pre-schools provide facilities for 4,397 children between the ages of three and four years.

In July 1986 there were twenty-two non-government primary schools in Canberra, eight schools offering both primary and secondary schooling and five schools with secondary grades only. There were 10,266 pupils enrolled in primary grades at non-government schools and 9,762 in the secondary grades.

Higher education institutions

The Australian National University was established by an Act of Parliament and is administered by a governing council. The Institute of Advanced Studies within the University is a centre of research and training in research. It includes the John Curtin School of Medical Research, and Research Schools of Physical Sciences, Social Sciences, Pacific Studies, Chemistry, Biological Sciences and Earth Sciences. The Mount Stromlo and Siding Spring Observatories are part of the Institute of Advanced Studies. The Faculties carry out both undergraduate and postgraduate training and research, and are composed of the Faculties of Arts, Asian Studies, Economics and Commerce, Law and Science. The total student enrolment in 1986 was 6,349. The University has established a number of academic research centres.

The Canberra College of Advanced Education is administered by a governing council, constituted under an Act of Parliament and offers courses in six schools—Applied Science, Communication, Education, Environmental Design, Information Sciences and Engineering, and Management. Courses have a professional or vocational orientation and lead to Bachelor and Master degrees, and to Associate Diploma, Diploma and Graduate Diploma awards. There were 5,964 students enrolled in 1986. The College has set up several research centres.

Continuing education

The Centre for Continuing Education is part of the Australian National University and it aims to foster 'the learning society' by enriching the contacts between the University and the community to their mutual advantage. The Centre offers a wide range of courses in the natural and social sciences and the humanities.

Tourism

Tourism is of paramount importance to the Territory's economy and in the planning and development of the Capital. The A.C.T. has only 1.6 per cent of the national population, yet receives 2.1 per cent of annual interstate visits and 12 per cent of Australia's international visitors; altogether approximately 1.4 million persons aged 14 years and over stay one or more nights. Tourism injects an estimated $250 million into the economy and sustains employment for 7,000 people.

The official tourist servicing and marketing operation in the A.C.T. is provided by the Canberra Tourism Development Bureau. Planning and development of physical facilities remain the responsibility of the National Capital Development Commission. The Bureau operates a highway reception and information centre on the northern (main) gateway to the city, and branch offices in Sydney, Melbourne and Perth. The total operational cost, including salaries and overtime, was approximate $2.7 million in 1986–87.

Tourist features most patronised in the A.C.T. are the Australian War Memorial, Australian National Gallery, Black Mountain Telecommunications Tower, High Court of Australia, Parliament House, the old Parliament House, National Botanic Gardens, National Library, Royal Australian Mint and Regatta Point Planning Exhibition. Mountain lookouts, lakes and reserves are also significant attractions.

Finance

In the following table, identifiable revenue and outlay relating to the Australian Capital Territory have been classified in a National Accounts form. The table covers transactions of the Commonwealth Government in respect of the Australian Capital Territory in the Consolidated Revenue Fund and the following trust funds: Australian Capital Territory Forestry, Australian Capital Territory Housing, Australian Capital Territory Transport and Australian Capital Territory Suspense. In addition, details of the financial transactions of the following public corporations are also covered: Australian Capital Territory Electricity Authority, Commonwealth Brickworks (to September 1979), Canberra Retail Market Trust, National Capital Development Commission, the Canberra Theatre Trust, the Canberra College of Advanced Education, A.C.T. Gaming and Liquor Authority, Canberra Commercial Development Authority and the Australian Capital Territory Health Commission including the Canberra and Woden Valley Hospitals. Not included are: revenue derived by the

Commonwealth Government from income taxes, sales tax, etc., levied in the Australian Capital Territory; outlay on items of a national character such as defence, civil aviation, railways, etc.; and payments to residents from the National Welfare Fund.

AUSTRALIAN CAPITAL TERRITORY: OUTLAY AND REVENUE
($ million)

	1982–83	*1983–84*	*1984–85p*
Current outlay (*a*)	400.7	457.5	520.2
General government final consumption expenditure (*a*)	337.5	387.7	444.6
Gross current expenditure (*a*)	434.7	492.8	544.6
Offsetting receipts from sales, etc.	97.2	105.1	100.0
Requited current transfer payments	7.0	6.5	2.9
Interest payments	7.0	6.5	2.9
Unrequited current transfer payments	56.1	63.3	72.7
Subsidies paid to enterprises	14.9	15.0	14.7
Subsidies to public trading enterprises	14.5	14.8	14.7
Subsidies to other enterprises	0.4	0.2	—
Personal benefit payments	9.1	9.7	11.0
Current grants	32.1	38.5	46.9
Grants to non-profit institutions	32.1	38.5	46.9
Capital outlays	83.6	71.5	107.3
Gross fixed capital expenditure	108.6	126.8	204.8
Expenditure on new fixed assets	110.5	124.7	204.9
Expenditure on secondhand fixed assets (net)	−1.9	2.1	—
Increase in stocks	−0.7	0.6	1.1
Expenditure on land and intangible assets (net)	−27.5	−46.6	−95.1
Capital Transfer payments	2.8	2.9	2.8
Grants to private sector and public financial enterprises	2.8	2.9	2.8
Advances paid (net):	0.4	−12.1	−6.3
To private sector	0.4	−12.1	−6.3
Revenue and grants received	154.4	158.9	174.7
Taxes, fees and fines	91.0	102.9	125.1
Taxes	85.3	96.3	116.2
Fees from regulatory services	3.2	4.6	6.5
Fines	2.4	2.0	2.4
Net operating surpluses of trading enterprises	24.6	20.6	13.5
Property income	38.9	35.4	36.1
Interest received:	32.1	31.6	31.7
From other sectors	32.1	31.6	31.7
Other property income	6.8	3.8	4.3
Other revenue	—	—	—
Financing transactions	−8.7	−1.9	3.1
Domestic borrowing (net)	−0.5	−4.5	−2.7
Deposits received (net)	−0.2	−1.2	−0.4
Decrease in investments	−0.6	−0.8	−0.9
Decrease in currency and deposits	−13.5	−6.2	7.6
Increase in provisions:	5.2	6.5	4.0
Depreciation provisions	3.9	4.2	4.1
Other provisions	1.3	2.3	−0.1
Other funds available (net)	0.8	4.3	−4.4
Net charge to Commonwealth budget (*b*)	338.6	372.0	449.7

(*a*) Excludes estimate of expenditure on Police Services in the Australian Capital Territory. Information on the actual expenditure on these services is not available. (*b*) This item is a partial measure of the net difference between revenues raised and expenditures made in the Australian Capital Territory because expenditures have been overstated by inclusion of outlays on Commonwealth offices and national works, and revenues understated by exclusion of income taxes, sales tax, etc. and excise duties levied in the Australian Capital Territory. This information is not separately available.

NORFOLK ISLAND

General description

Norfolk Island, discovered by Captain Cook in 1774, is situated approximately in latitude 29°02′S, longitude 167°57′E. Its total area is approximately 3,455 hectares, the island being about 8 kilometres long and 5 kilometres wide. It is 1,676 kilometres from Sydney, 1,063 kilometres from Auckland and 772 kilometres from Noumea. The coastline, which is 32 kilometres long, consists of almost inaccessible cliffs rising from the waters edge, except at Kingston in the south and the landing place at Cascade on the northern side. The climate is equable, the average daily maximum temperature varying between 16°C and 28°C, and the average annual rainfall is 1,350 millimetres. The resident population is about 1,800.

The island served as a penal station from 1788 to 1814 and from 1825 to 1855. In 1856, 194 descendants of the *Bounty* mutineers were transferred from Pitcairn Island.

Administration

In 1856, the island was created a distinct and separate settlement under the jurisdiction of the Governor of New South Wales. In 1897 it was made a dependency under the Governor of that colony, and finally, by the passage of the *Norfolk Island Act 1913*, became a Territory of Australia.

In May 1978, the Government announced that it should try to develop for Norfolk Island a form of government involving the island's own elected representatives under which the necessary revenue could be raised by its own system of law. The *Norfolk Island Act 1979*, which was assented to on 30 May, established the framework for this objective. In broad terms, the Act equips Norfolk Island with responsible legislative and executive government to enable it to run its own affairs to the greatest practicable extent. Wide powers are exercised by the Norfolk Island Legislative Assembly and by an Executive Council, comprising the executive members of the Legislative Assembly who have ministerial-type responsibilities. The Act preserves the Commonwealth's responsibility for Norfolk Island as a Territory under its authority, with the Minister for the Arts, Sport, the Environment, Tourism and Territories as the responsible Minister; and indicates the Parliament's intention that consideration will be given to an extension of the powers of the Legislative Assembly and the political and administrative institutions of Norfolk Island within five years. In 1985 legislative and executive responsibility for a range of matters was formally transferred to the Norfolk Island Government. Consideration is being given to the transfer of further powers as part of an on-going process of devolution of responsibility to the local community.

The Office of the Administrator is financed from Commonwealth expenditure which amounted to $362,000 in 1986–87. A further $408,000 was provided by the Commonwealth during the year for the restoration and maintenance of historic structures.

Economic activity

The island's major economic activity is tourism. Primary production is not fully adequate for local needs and foodstuffs are imported from New Zealand and Australia.

Primary industries

The soil on the island is particularly fertile, the climate equable and the rainfall fairly evenly distributed except for a pronounced dry period in November. This enables a wide range of temperate and semi-tropical products to be cultivated. However, the island's comparative isolation presents trading difficulties, and there is only very limited production of export crops.

Fish are in abundance and in the past a number of ventures have been formed to exploit this resource, but they have been short-lived, mainly because of the lack of a sheltered harbour. A modern whaling station was started on the island in 1955, and production commenced during the second half of 1956. Owing to a marked scarcity of whales after 1961 the station was closed down.

A forestry program is being carried out to increase the resources of Norfolk Island Pine and to introduce suitable types of eucalypts.

Tourists

Regular air services to the island are available for those who seek a quiet holiday in surroundings of beauty and historic interest. At present, accommodation consists of flats and hotels as well as licensed and unlicensed guest houses. There were 29,085 tourist arrivals in 1986–87.

Employment

A large proportion of the population derives its income from various aspects of the tourist industry including the operation of hotels and low duty stores. A number of clerical and other positions are available to islanders in the Norfolk Island Administration. Very few people rely entirely on agricultural pursuits for their income.

Finance

Until 1979, Norfolk Island revenue was supplemented by annual grants from the Commonwealth Government. Under present constitutional arrangements, the cost of maintaining the island, other than the Administrator and his staff, is met as far as practicable from island sources.

NORFOLK ISLAND: REVENUE AND EXPENDITURE

($'000)

	1980–81	*1981–82*	*1982–83*	*1983–84*	*1984–85*	*1985–86*
REVENUE						
Customs duty	995	785	710	1,104	1,373	1,833
Liquor profit	339	287	288	423	439	578
Company fees	121	103	111	96	94	84
Sale of stamps	1,075	1,351	755	1,016	801	744
Vehicle registration and licence fees	81	57	92	113	117	124
All other	677	830	718	1,094	1,624	1,777
Total revenue	**3,288**	**3,413**	**2,674**	**3,846**	**4,448**	**5,140**
EXPENDITURE						
Administration	903	1,334	1,214	1,451	1,669	1,770
Education services	425	722	453	627	627	927
Health and welfare services	363	452	485	469	514	552
Repairs and maintenance	378	470	436	467	571	706
Capital works and services	353	317	210	99	265	768
Miscellaneous services	155	277	278	312	312	431
Legislative Assembly	234	110	183	192	230	234
Total expenditure	**2,811**	**3,682**	**3,261**	**3,617**	**4,188**	**5,388**

Trade, transport and communication

Imports to Norfolk Island since World War II have risen in value from $65,000 in 1945-46 to over $23 million in 1985-86. The major proportion came from Australia and New Zealand. Exports in 1985-86 amounted to $2.6 million, with Australia and New Zealand as the principal markets.

Two shipping companies operate cargo services to Norfolk Island at approximately 6 weekly intervals, linking the island with Australia, New Zealand and other islands in the South Pacific area.

A passenger and air freight service between Sydney and Norfolk Island is operated by East-West Airlines Ltd. Air New Zealand Limited provides a service 2–3 times a week to the island from Auckland. Flights between Norfolk Island and Brisbane are operated by Air New South Wales 2–3 times a week and by Norfolk Island Airlines 2–4 times a week.

There are approximately 80 kilometres of motor roads on the island. A substantial section of the population possesses private motor cars. Hire cars, taxis and scooters are available.

The island has an automatic telephone exchange and international telephone connection with Australia, New Zealand and Fiji by way of the ANZCAN submarine cable system. A local broadcasting service is operated by the Administration.

Education

Education is free and compulsory between the ages of 6 and 15 years. The school, which is conducted for the Administration by the New South Wales Department of Education, conforms to the Australian standard of public education, ranging from Kindergarten to the School Certificate (Year 10) level. The number of students enrolled at 30 June 1986 was 315.

Some bursaries, subject to a means test, are available for pupils who wish to attend a mainland school either to continue their studies beyond the School Certificate level or to undertake high school courses not available on the island. A limited number of trainee scholarships are available for pupils who have left school and wish to undertake apprenticeships or similar training away from the island.

Judiciary

The judicial system of Norfolk Island consists of a Supreme Court and a Court of Petty Sessions. The Supreme Court is the highest judicial authority in the Territory and is a superior court of record with original criminal and civil jurisdiction. The jurisdiction of the court is exercised by one judge sitting in court or, to the extent provided by or under ordinance, sitting in chambers. The jurisdiction of the Court of Petty Sessions is exercised by the Chief Magistrate or any three Magistrates.

HEARD ISLAND AND McDONALD ISLANDS

These islands, about 4,100 kilometres south-west of Fremantle, were transferred from the United Kingdom to Australia as from 26 December 1947. The laws of the Australian Capital Territory were declared to be in force in the Territory of Heard Island and McDonald Islands by the *Heard and McDonald Islands Act 1953*.

In December 1947, an Australian scientific station was established on Heard Island. Meteorological investigations were conducted until the station was closed in March 1955 following the establishment of Mawson Station on the Antarctic mainland. Australian expeditions have since visited the island from time to time. Heard Island is about 43 kilometres long and 20 kilometres wide. The McDonald Islands are 43 kilometres to the west of Heard Island. They are small, rocky and precipitous. The first known landing on McDonald Island, the largest of the group of the same name, took place on 27 January 1971 when two members of the Australian National Antarctic Research Expeditions (ANARE) paid a short visit on their way to the Heard Island station.

AUSTRALIAN ANTARCTIC TERRITORY

An Imperial Order in Council of 7 February 1933 placed under Australian authority all the islands and territories, other than Terre Adelie, situated south of 60°S latitude and lying between 160°E longitude and 45°E longitude. The Order came into force with a proclamation issued by the Governor-General on 24 August 1936 after the passage of the *Australian Antarctic Territory Acceptance Act 1933*. The boundaries of Terre Adelie were definitively fixed by a French Decree of 1 April 1938 as the islands and territories south of 60°S latitude lying between 136°E longitude and 142°E longitude. The *Australian Antarctic Territory Act 1954* declared that the laws in force in the Australian Capital Territory are, so far as they are applicable and are not inconsistent with any ordinance made under the Act, in force in the Australian Antarctic Territory.

On 13 February 1954 the Australian National Antarctic Research Expeditions (ANARE) established a station on Mac-Robertson Land at latitude 67°36′S and longitude 62°53′E. The station was named Mawson in honour of the late Sir Douglas Mawson and was the first permanent Australian station to be set up on the Antarctic continent. Scientific research (including meteorology, cosmic ray physics and glaciology) is conducted at Mawson, which is also a centre for coastal and inland survey expeditions.

A second Australian scientific research station was established on the coast of Princess Elizabeth Land on 13 January 1957, at latitude 68°35′S and longitude 77°58′E. The station was named in honour of the late Captain John King Davis, second-in-command of two of Mawson's expeditions and master of several famous Antarctic ships. The station was temporarily closed on 25 January 1965 and re-opened on 15 February 1969. On 4 February 1959 the Commonwealth Government accepted from the United States Government custody of Wilkes station, established by the United States on 16 January 1957, on Vincennes Bay at latitude 66°15′S and longitude 110°32′E. The station was named in honour of Lieutenant Charles Wilkes who commanded the 1938–42 United States expedition to the area. The station was closed on 19 February 1969 when activities were transferred to Casey station built about 2 kilometres south of Wilkes. Casey station, which was opened on 19 February 1969, was named in honour of Lord Casey, former Governor-General of Australia, in recognition of his long association with Australia's Antarctic effort.

In 1981–82, a ten-year program for redeveloping Australia's Antarctic stations began and is now well advanced. The stations act as bases for mounting inland programs and provide basic facilities for weather observations, communications and research.

The highest priority for research relates to the study of living and mineral resources of the Antarctic continent and off-shore areas and the environmental effects of their exploration and exploitation.

COCOS (KEELING) ISLANDS

General description

The Territory of the Cocos (Keeling) Islands comprises a group of 27 small coral islands in two separate atolls in the Indian Ocean, 2,768 kilometres north-west of Perth.

The Territory's administrative community, airport and animal quarantine station are located on West Island, the largest island, about 10 kilometres long. The Cocos Malay community lives on Home Island. The main atoll is low-lying, flat, and thickly covered by coconut palms, and surrounds a lagoon which has an anchorage in the northern part but which is extremely difficult for navigation.

The climate is equable and pleasant, usually being under the influence of the south-east trade winds for about nine months of the year. However, the winds vary at times, and meteorological reports from the Territory are particularly valuable for those engaged in forecasting for the eastern Indian Ocean. The temperature varies between 21°C and 32°C, and the average yearly rainfall is 1,998 millimetres. There are occasional violent storms.

History and administration

The islands were discovered in 1609 by Captain William Keeling of the East India Company, but were uninhabited until Alexander Hare and John Clunies-Ross established small settlements at different points on the main atoll in 1826 and 1827 respectively. Clunies-Ross secured sole possession in 1831, and the islands were declared part of the British Dominions in 1857. In 1878 responsibility for the supervision of the islands was transferred to the Government of Ceylon and eight years later, to the Government of the Straits Settlements.

In 1903 the islands were incorporated in the Settlement of Singapore but were attached again to Ceylon during World War II while Singapore was under Japanese occupation.

By mutual agreement between the British and Australian Governments, and confirmed by complementary legislation, the islands became an Australian territory in 1955. The Australian Government purchased the Clunies-Ross interests in the Territory in 1978, except for the family home and grounds.

The *Cocos (Keeling) Islands Act 1955* is the basis of the Territory's administrative, legislative and judicial systems.

An Administrator, appointed by the Governor-General and responsible to the Minister for the Arts, Sport, the Environment, Tourism and Territories, is the senior Government representative in the Territory.

On 25 July 1979 the Cocos (Keeling) Islands Council, elected by members of the Home Island community, was established. The Council has responsibility for a range of functions in the Home Island village area, advises the Administrator on local affairs, and is also empowered to make representations on ordinances proposed for the Territory.

The Cocos Islands Co-operative Society Limited, also established in 1979, conducts the business enterprises of the Cocos people. The Co-operative undertakes copra production, building maintenance and construction, stevedoring and lighterage services, retailing and provision of accommodation and catering services.

The Territory's own postal service, including a philatelic bureau, was opened in 1979. The service, run by the Administration, provides local employment and its profits are directed to the Cocos (Keeling) Islands Council for use on community projects.

On 6 April 1984 the Cocos Malay community, in an Act of Self Determination which took the form of a referendum observed by the United Nations, chose to integrate with Australia.

The population of the Cocos (Keeling) Islands at 30 June 1986 was 616, distributed between Home Island (414) and West Island (202).

Transport and communication

There is an airport of international standard at West Island, controlled by the Administrator under licence from the Department of Transport and Communications. The Department of the Arts, Sport, the Environment, Tourism and Territories operates a weekly air charter service which alternates between the routes Perth–Christmas Island–Cocos (Keeling) Islands–Perth and Perth–Cocos (Keeling) Islands–Christmas Island–Perth. A shipping service operates to the Territory every 6-8 weeks. The Administration operates and maintains, on behalf of the Overseas Telecommunications Commission (Australia), a satellite communications facility which provides telephone, facsimile and telex services to the Australian mainland and beyond. There are local postal and telephone services, and a non-commercial broadcasting station.

CHRISTMAS ISLAND

General description

Christmas Island is an isolated peak situated in the Indian Ocean, latitude 10°25′ S, longitude 105°40′ E. It is approximately 360 kilometres south from Java Head at the southern entrance to Sunda Strait, 1,300 kilometres from Singapore and 2,600 kilometres from Perth. Christmas Island covers an area of about 135 square kilometres. It consists of a central plateau varying in height from 250 metres above sea level at the eastern side of the island to 150 metres on the western side. Several prominent rises in the plateau reach 360 metres above sea level. The plateau descends to the sea in a series of steep slopes alternating with terraces. Sea cliffs over 20 metres high run along a considerable portion of the coastline except in a few places, the chief of which is Flying Fish Cove where the principal settlement is located and which is the only anchorage.

The climate is tropical, with prevailing winds coming from the south-east to east-south-east from May to December, and occasionally shifting round to between north and west from December to April (the wet season). The average yearly rainfall is 2,673 mm with a marked summer incidence. The porous nature of the ground prevents the formation of pools of water, but there are several good springs which provide an adequate supply of fresh water for the population and for the mining operation. The mean average temperature is about 27°C, and does not vary greatly throughout the year.

Economy

The economy of the Territory is based almost entirely on the mining and extraction of phosphate. During the year ended 30 June 1987, 448,700 tonnes of phosphate rock were sent to Australia and New Zealand, while 300,293 tonnes were exported elsewhere. Mining operations on Christmas Island are conducted by the Phosphate Mining Corporation of Christmas Island, (PMCI), a Commonwealth statutory authority. All rainforest clearing for mining must be approved by the Government Conservator, an officer of the Australian National Parks and Wildlife Service. A program of land rehabilitation has been adopted and a nursery is maintained for reafforestation.

The Government has actively encouraged private sector investment in new activities on the island to secure an economic future which is not dependent on mining. Several worthwhile development proposals which have been received are progressing, including a major tourist hotel/casino project.

Population

Some 2,000 people were residents of the island at 30 June 1987. The majority are of Chinese extraction, and the remainder includes mainly Malays and Caucasians. There is no indigenous population. Under the provisions of the *Christmas Island Act 1958* and the *Australian Citizenship Act 1948* almost all residents are Australian citizens or have permanent Australian resident status.

Education

The Christmas Island Area School is run by the Administration and is staffed by teachers provided by the Commonwealth Teaching Service, which staffs government schools in the Australian Capital Territory. The school provides education from pre-school level through to Year 10 secondary level. It follows a locally developed curriculum aligned with that used in Western Australia. There are 437 students enrolled at the school. A further 35 senior secondary students (Years 11 and 12) in Western Australian schools receive assistance from the Administration.

The first full-time English courses for PMCI employees commenced on 23 April 1986. Full and part-time English courses have also been conducted for former PMCI workers and other island residents.

History and administration

Summarised particulars of the history of Christmas Island up to its administration by the United Kingdom as a separate Crown Colony (from 1 January 1958, pending transfer to Australia) are given in *Year Book* No. 51, and in earlier issues. On 1 October 1958, the island was accepted by Australia under the *Christmas Island Act 1958*. The Territory is administered by an Administrator appointed by the Governor-General. Responsibility for the administration and government of the Territory rests with the Minister for the Arts, Sport, the Environment, Tourism and Territories. The Administrator reports to the Minister and is subject to his direction. The laws which were in force on the island at 30 September 1958 were continued as the laws of the Territory after its transfer to Australia.

The *Migration Act 1958* was extended to the Territory from 23 January 1981, enabling all island residents to become Australian residents and to acquire Australian citizenship. A number of measures have since been taken to extend the same benefits and responsibilities to island residents as apply on the Australian mainland so that the islanders will be in no better or worse a position than their mainland counterparts.

The *Christmas Island Administration (Miscellaneous Amendments) Act 1984* received Royal Assent on 18 October 1984. The Act provides for the extension of the *Commonwealth Electoral Act 1918, Social Security Act 1947, National Health Act 1953, Student Assistance Act 1973* and related Acts relevant to Christmas Island. Following passage of the legislation, normal social security and health benefits applied with effect from 1 October 1984 and 18 October 1984 respectively and Australian citizens in the Territory were entitled to vote in federal elections and referendums from 18 October 1984. The *Lands Ordinance 1987* provides for the leasing of land for commercial and residential purposes.

The *Services Corporation Ordinance 1984* was made on 26 October 1984, creating the Christmas Island Services Corporation (CISC) with power to provide many local and community services on the island.

The *Taxation Laws Amendment Act 1985* received Royal Assent on 30 May 1985. The Act provided for the introduction of full company tax and the Medicare levy, as well as the phased introduction of personal income tax on Christmas Island over a four year period from 1 July 1985.

The *Christmas Island Assembly Ordinance 1985* and the Christmas Island Assembly (Election) Regulations permitted Christmas Island residents to elect their first Assembly on 28 September 1985. The inaugural meeting was held on 6 October 1985. Nine members were elected for a one-year term under a voting system similar to that used in electing Senators of the Commonwealth of Australia. The Christmas Island Assembly has responsibility for directing the Christmas Island Services Corporation in the performance of its functions.

Transport and communication

Sea transport to and from the island is maintained by vessels operating under contractual arrangements between PMCI, the Australian Phosphate Corporation and the Australian National Line.

An air charter arranged by the Department of the Arts, Sport, the Environment, Tourism and Territories, provides a weekly service to the island following alternate routes Perth–Christmas Island–Cocos (Keeling) Islands–Perth one week and Perth–Cocos (Keeling) Islands–Christmas Island–Perth the next. The Department also operates a weekly air charter between Singapore and the island.

The Territory has its own radio broadcasting station, police force, hospital, postal service and philatelic bureau. The VISTA communications system which provides an external telex and telephone service by INTELSAT satellite, and a back-up INMARSAT system, became fully operational on 17 October 1985.

CORAL SEA ISLANDS TERRITORY

The Coral Sea Islands are situated east of Queensland between the Great Barrier Reef and longitude 156°06′E and between latitudes 12° and 24°S. The Territory comprises a sea area of approximately 780,000 square kilometres. The islands (or cays) are largely formed of sand and coral. Some have grass or scrub cover, but most are extremely small, with no permanent fresh water. A meteorological station, staffed by three people, has operated on Willis Island since 1921. The remaining islands are uninhabited.

In the 19th century many ships were wrecked in the area, and the reefs and islands are often named for the ships which foundered there. There are beacons on the Frederick and Saumarez Reefs and a lighthouse on Bougainville Reef. There are occasional tropical cyclones in the area. Meteorological data are relayed to the mainland from automatic weather stations located on Cato Island, Flinders Reef, Frederick Reef, Holmes Reef, Lihou Reef and Marion Reef.

Six species of sea turtle nest in the Coral Sea Islands Territory, including the largest species in the world, *Dermochelys coriacea*, which is regarded as one of the most endangered of the world's sea turtles. There are at least 24 bird species in the Territory; 13 of these are protected under an Australian-Japanese agreement on endangered and migratory birds. In 1982 the Lihou Reef and Coringa-Herald National Nature Reserves were declared to protect the wildlife in the Territory.

There have been a number of scientific expeditions to the region since 1859, and many specimens of flora and fauna are now housed in Australian herbariums and museums.

In 1969, the Coral Sea Islands became a Territory of the Commonwealth under the Coral Sea Islands Act. The Department of the Arts, Sport, the Environment, Tourism and Territories in Canberra, is responsible for the administration of the Territory. The area is visited regularly by the Royal Australian Navy.

Aerial surveillance of the Territory is undertaken by the Royal Australian Air Force and by chartered civil aircraft. Regular visits are made to the islands by ships of the Royal Australian Navy.

The Jabiru and Challis oil fields are located within the adjacent area of the Territory. The Jabiru field commenced production in 1986, and development of the Challis field is being investigated.

THE TERRITORY OF ASHMORE AND CARTIER ISLANDS

Ashmore Islands (known as Middle, East and West Islands) and Cartier Island are situated in the Indian Ocean some 850 km and 790 km west of Darwin respectively. The islands lie at the outer edge of the continental shelf. They are small and low and are composed of coral and sand. Vegetation consists mainly of grass. The islands have no permanent inhabitants.

Great Britain took formal possession of the Ashmores in 1878 and Cartier Island was annexed in 1909. By Imperial Order in Council of 23 July 1931, the islands were placed under the authority of the Commonwealth of Australia. The islands were accepted by Australia through the *Ashmore and Cartier Islands Acceptance Act 1933* under the name of the Territory of Ashmore and Cartier Islands. By amendments to the Act in 1938, the Territory was annexed to, and deemed to form part of, the Northern Territory. With the granting of self-government to the Northern Territory on 1 July 1978, the administration of the Territory became a direct responsibility of the Commonwealth Government.

Responsibility for the administration of the Territory rests with the Minister for the Territories. Relevant laws of the Northern Territory as at 1 July 1978 presently apply in the Territory. A 1985 amendment to the Ashmore and Cartier Islands Acceptance Act will, when it comes into force, extend to the Territory laws of the Northern Territory as in force from time to time, so providing the Territory with an up-to-date body of law.

Birdlife is plentiful on the islands of Ashmore Reef. Turtles are plentiful at certain times of the year and *bêche-de-mer* is abundant. In recognition of the environmental significance of the area, the Reef was in 1983 given the status of a national nature reserve under the *National Parks and Wildlife Conservation Act 1975*. Regular visits are made to the Reef by officers of the Australian National Parks and Wildlife Service.

An agreement between Australia and Indonesia allows Indonesian traditional fishermen to continue to fish in waters of the Territory. Since 1985, an Australian presence has been maintained at Ashmore Reef during the March to November fishing season to monitor the activities of visiting Indonesian fishermen.

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LIST OF SPECIAL ARTICLES AND MISCELLANEOUS MATTER CONTAINED IN PREVIOUS ISSUES

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[3] *Also*—1954–55, No. 43, page 833; 1947–48, No. 39, pages 977–8; 1938–39, No. 34, page 451; 1924–25, No. 22, page 695.

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[4] *Also*—1955, No. 43, page 911; 1948, No. 39, page 907; 1938–39, No. 34, page 452; 1924–25, No. 22, page 659.

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